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Blood-borne Pathogens and Sexually Transmitted Infections

Surveillance Report
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Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

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1.
Glossary

1.1 Acronyms

1.2 Terms

1.1 *Acronyms*

AIDS:	Acquired Immune Deficiency Syndrome
CBS:	Canadian Blood Services
CDRS:	Communicable Disease Reporting System at Alberta Health and Wellness
HBV:	Hepatitis B Virus
HCV:	Hepatitis C Virus
HAART:	Highly Active Anti-Retroviral Therapy
HIV:	Human Immunodeficiency Virus
MPC:	Mucopurulent Cervicitis
NDR:	*Notifiable Disease Report* Form
NGU:	Non-Gonococcal Urethritis
PHN:	Personal Health Number
PID:	Pelvic Inflammatory Disease
PLPH:	Provincial Laboratory for Public Health
RHA:	Regional Health Authority
STI:	Sexually Transmitted Infection

1.2 Terms

Hepatitis B: The infection caused by the hepatitis B virus (HBV).

Hepatitis C: The infection caused by the hepatitis C virus (HCV).

Only infections diagnosed for the first time are included in this report. This is a proxy for infection incidence, although true incidence includes undiagnosed and unreported cases.

Newly diagnosed cases: Cases diagnosed and reported to the CDRS for the first time. Exclusions include cases that have yet to be diagnosed, cases that have yet to be reported, and cases that have previously been reported. Thus, newly diagnosed cases do not represent the true incidence of infection (newly infected each year) or prevalence of infection (total number of people living with the infection).

Co-infections with two pathogens can be concurrent (both diagnosed within 30 days of each other) or cumulative (both diagnosed within a longer time period, but not necessarily at the same time).

Co-Infection: A newly diagnosed infection of one type that occurs along with a newly diagnosed infection of another type in the same individual, within a specified period of time. Co-infections in this report are categorized as concurrent (occurring in the same individual within 30 days of one another) or cumulative (occurring in the same individual at some point during a specified time period, such as 1998 to 2006). For example, an individual with chlamydia who is concurrently co-infected with gonorrhea has a newly diagnosed chlamydia infection that is diagnosed within 30 days (before or after) of a newly diagnosed gonorrhea infection. The same individual has a cumulative chlamydia with gonorrhea co-infection if the gonorrhea infection was diagnosed at any time before or after the chlamydia infection but not within the 30 day window.

Repeat infection: A newly diagnosed infection that is preceded by another newly diagnosed infection of the same type in the same individual, within a specified period of time. For example, a repeat chlamydia infection would occur when cases of chlamydia are diagnosed in the same individual, with diagnosis dates at least 31 days apart (indicating a new infection) within the same calendar year.

Rate of newly diagnosed cases: Number of newly diagnosed cases of a given infection, co-infection, or repeat infection per 100,000 population in a given time period. Populations are in Appendix 15.7.

Trends and rate differences should be evaluated in the context of confidence intervals.

Age-adjusted rate of newly diagnosed cases: Valid comparisons across geographic areas or over time between populations require equivalent age/sex compositions of populations. In this report, the rates of newly diagnosed cases were adjusted by the age distribution of the 1996 Canadian census: The age distributions were statistically equalized for the relevant populations for a given geographic area and/or time period. The resulting age-adjusted rates are useful for comparisons across geographic areas or over time but may not reflect the actual magnitude of the disease in a given geographic area or time period. Standard errors and 95% confidence intervals of age-adjusted rates were estimated according to Carriere and Roos.[1] In figures and text in the current report, age-adjusted rates are reported (with the exception of age group analyses, in which case age-adjusted rates do not apply and crude rates are reported). In tables, crude rates and age-adjusted rates are reported.

1.2 Terms

Rates are adjusted for the age and sex composition of the population.

All rate differences should be evaluated in the context of confidence intervals.

Patient age is based on age at time of diagnosis of the infection, with the exception of HBV infections, in which case age at time of onset of symptoms was used.

Geographic area analyses were broken down by RHA or by four geographic areas (Southern Alberta, Calgary area, Edmonton area, and Northern Alberta), as required by the data.

Ethnicity was reported in accordance with categories appearing on the various reporting forms.

Ethnicity is different from First Nations status, which was assigned by database linkage. Ethnicity and First Nations status were used in different analyses.

Rate ratio: The ratio of one rate to another. For example, a rate of 40 per 100,000 population in one group versus a rate of 10 per 100,000 results in a rate ratio of 4 to 1 (the rate in the first population is 4 times that in the second population).

Confidence intervals: Statistical estimates (such as means or percents) are uncertain; the reported result of a statistical analysis is only the most likely result. A confidence interval tells us the range within which the true value lies. In this report, confidence intervals provide a range of values with 95% certainty. For example, if the mean of a sample of numbers is 75, with a confidence interval of 60 to 90, this means that the our best estimate of the true mean of all of the numbers is 75, and that 95 times out of 100 we expect that the true mean lies between 60 and 90.

Time trend: A statistically significant change in rate over a specified period of time. For example, there is a time trend in gonorrhea infections in Alberta: The gonorrhea rate increased significantly from 1998 to 2006.

Age at diagnosis: Age of patient on the date the case was diagnosed by a physician. This is the age used in data analyses for this report, with the exception of acute HBV data, which are based on date of onset of symptoms.

Geographic area: RHAs of patient residence (December 2003 boundaries) were used for geographic area analyses whenever numbers of infections were large enough to permit breakdowns into the nine RHAs. For infections with lower frequencies, the RHAs were combined into four geographic areas (Southern Alberta (Chinook, Palliser, David Thompson, and East Central RHAs), Calgary area (Calgary RHA), Edmonton area (Capital RHA), and Northern Alberta (Aspen, Peace Country, and Northern Lights RHAs). A map appears in Appendix 15.1).

Ethnicity: *Ethnicity for HIV/AIDS cases* was assigned as reported on the Public Health Agency of Canada HIV/AIDS Case Report form for (see Appendix 15.2). Categories include White (reported as Caucasian in tables and figures); Black; North American Indian, Métis, or Inuit (reported as Aboriginal); Asian, South Asian, or Arab/West Asian (reported as Asian); Latin-American, and Other (including mixed ethnicity). *Ethnicity for sexually transmitted infection cases* was assigned as reported on the Notification of Sexually Transmitted Infections form (see Appendix 15.4). Categories include Caucasian; First Nations, Métis, or Inuit (reported as Aboriginal in figures); Oriental or Other Asiatic (reported as Oriental/Other Asian); Black; or Other (specified or unknown). Additionally, First Nations status was assigned by database linkage (see First Nations status term below) for all pathogens.

1.2 Terms

First Nations status was determined by database linkage. This was in addition to ethnicity assignment (based on reporting forms).

First Nations status: First Nations status was extracted from the Alberta Health Care Insurance Plan Registry (see *Data Sources* and *Data Extraction, Cleaning and Linkage* sections) for all pathogens. Persons having First Nations status in the Alberta Health Care Insurance Plan Registry are registered under the Indian Act [2] or are recognized as Inuit or Innu and as such have their Alberta Health Care Insurance Plan premiums paid by the federal government. First Nations status is attributed to any individual currently residing in Alberta who has ever been recorded as having First Nations Treaty status. A detailed discussion of assignment of First Nations status is available in Schopflocher (2004).[3] Note that this category excludes Métis persons, unlike the Aboriginal ethnicity category used for the HIV/AIDS and sexually transmitted infection analyses.

Cases could be categorized by both ethnicity and First Nations status. These categorizations could overlap (i.e., Aboriginal ethnicity and First Nations status); in this case, some individuals would be included in both ethnicity and First Nations status analyses.

Exposure categories for HIV/AIDS are assigned according to a hierarchy of risk, ascertained at time of reporting.

Exposure categories: Risk factors to which reported HIV/AIDS cases were exposed. Exposure categories were created from categories on the Public Health Agency of Canada HIV/AIDS Case Report form (see form in see Appendix 15.2). Exposure categories used in our analyses include:

MSM (men who have had sex with men)
IDU (injection drug user of non-prescription drugs)
MSM-IDU (men who have had sex with men *and* have injected drugs)
Heterosexual, endemic (heterosexual contact with a person born in a country in which the predominant means of HIV transmission is heterosexual contact)
Heterosexual, other (combined category: heterosexual contact with a person known to be HIV-infected or at increased risk for HIV infection, or heterosexual contact with a person with unknown risk factors)
Blood/clotting factor (combined category: receipt of whole blood or blood components, or receipt of clotting factor for treatment of hemophilia/coagulation disorder)
Occupational (exposure in an occupational setting)
Other (combined category: other medical or non-medical exposure in a non-occupational setting)
Mother-to-child/pediatric (combined category: transmission of HIV from an HIV-infected mother to her child during pregnancy, labour, or birth, or through breastfeeding; or other transmission to a person aged 15 or younger)
Unknown (combined category: no identified risk factors (NIR), or source of exposure completely unknown)

STD Clinic: There are STD (Sexually Transmitted Disease) Clinics in Calgary, Edmonton, and Fort McMurray. These clinics provide diagnosis and treatment of sexually transmitted infections.

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

2.1 *Executive Summary*

This report contains data on selected blood-borne pathogen and sexually transmitted infections in Alberta. Pathogens studied include HIV (Human Immunodeficiency Virus), HCV (hepatitis C virus), HBV (hepatitis B virus; we report only acute HBV infections with the exception of HBV prenatal screening data), chlamydia, gonorrhea, syphilis (infectious, non-infectious, and congenital), mucopurulent cervicitis (MPC), non-gonococcal urethritis (NGU), pelvic inflammatory disease (PID), and selected co-infections. Measures are based on newly diagnosed cases of infection per year, up to 2006. Reported rates are age-adjusted according to 1996 Census Canada data.

For each infection, background information is provided on the effects of the infection, modes of transmission, available treatments, and international and Canadian data on infection rates. Our analyses of Alberta data examine time trends, age groups, geographic areas, ethnicities, First Nations status, exposure categories, deaths, and prenatal screening, as available or appropriate for each pathogen.

HIV/AIDS

- The rates of HIV and AIDS cases did not show a time trend between 1998 and 2006. There were 6.7 newly diagnosed HIV infections per 100,000 people in Alberta in 2006. The AIDS rate was 1.7 (per 100,000 population).
- Male rates of HIV/AIDS were higher than female rates. Newly diagnosed HIV and AIDS rates were highest for males in the 30 to 39 year old age group. For females, HIV rates were highest for 20 to 39 year olds, while AIDS cases were slightly more common for 25 to 29 year olds than for other age groups.
- The Edmonton area had the highest newly diagnosed HIV rates for both males and females between 1998 and 2006, while newly diagnosed AIDS rates were highest in the Calgary area.
- Over two thirds of male newly diagnosed HIV cases occurred in injection drug users and men who have sex with men, while heterosexual contact and injection drug use accounted for almost all female cases.
- Newly diagnosed male AIDS cases were predominantly among men who have sex with men, while over 60% of female cases were from heterosexual contact.
- Aboriginal ethnicity dominated in newly diagnosed HIV and AIDS cases in Northern Alberta.
- Newly diagnosed HIV rates for First Nations males were 5.7 times that of non-First Nations males, while rates for First Nations females were 14.8 times higher than non-First Nations females.
- In 2006, 97.0% of pregnant women were screened for HIV.
- Alberta AIDS patients are living longer, evidenced by increasing mean age at death.

2.1 Executive Summary

HCV

- The rate of newly diagnosed cases of HCV declined in Alberta between 1998 and 2006, for both males and females. In 2006, the rate was 40.7 (per 100,000 population), compared with 102.0 in 1998.
- First Nations rates were about 3 to 6 times higher than non-First Nations rates in 2006 (for males and females, respectively).
- Newly diagnosed cases of HCV peaked between 30 and 59 years of age in males, and between 30 and 39 years in females.
- David Thompson and Capital Health RHAs had the highest male rates between 1998 and 2006. The highest female HCV rates were in Capital RHA.

Acute HBV

- From 1998 to 2006, rates of newly diagnosed acute HBV cases decreased, most markedly for males. By 2006, the rates were 1.1 (per 100,000 males) and 0.5 (per 100,000 females), with just 27 newly diagnosed cases.
- Rates were highest for males 25 to 39 years of age, and for females 20 to 39 years of age.
- Regional differences in newly diagnosed acute HBV rates were not substantial.
- For 1998 to 2006 combined, the First Nations rate of newly diagnosed acute HBV was 3.5 (per 100,000 population), compared with 1.9 for non-First Nations individuals.
- All Alberta women receiving prenatal care were tested for HBV infection in 2006/07. In that year, 252 women tested positive for acute HBV. There were also 228 HBV carrier cases found among pregnant women in 2006.

Blood-borne Pathogen Co-infections

- In 2006, 8.7% of newly diagnosed HIV cases were concurrently co-infected with HCV, down from 16.2% in 1998. HCV cases concurrently co-infected with HIV were rarer, varying from 0.8% to 1.6% during this time period.
- The percentage of newly diagnosed acute HBV cases co-infected with HCV decreased from 14.3% in 1998 to 3.7% in 2006.
- HIV infections acquired through injection drug use accounted for three quarters of newly diagnosed HIV infections co-infected with HCV.
- Aboriginal or First Nations populations had higher rates of co-infection for all blood-borne pathogens co-infections studied.

2.1 *Executive Summary*

Chlamydia

- Chlamydia infections, like gonorrhea and syphilis infections, are on the rise in Alberta. Between 1998 and 2006, the newly diagnosed chlamydia rate increased from 179.2 (per 100,000 population) to 302.7. Rates for females were approximately double male rates.

- The newly diagnosed chlamydia rates for First Nations females stand out. In 2006, the female First Nations rate was 1219.6 (per 100,000 females), compared with 341.7 for non-First Nations females.

- Female rates were highest for 15 to 24 year olds, while male rates were highest for 20 to 24 year olds.

- Northern Lights RHA had the highest overall rate of newly diagnosed cases of chlamydia for 1998 to 2006 combined (343.3 per 100,000 population), while East Central RHA had the lowest rate (127.3).

- Women were more likely than men to be diagnosed with chlamydia in a physician's office.

- More than half of newly diagnosed cases of chlamydia between 1998 and 2006 were amongst Caucasians in all areas except Northern Alberta, where proportions of cases that were Aboriginal ethnicity were high.

- Each year, about 4% of newly diagnosed cases of chlamydia are repeat infections within that year.

Gonorrhea

- Although gonorrhea rates are lower than chlamydia rates in Alberta, gonorrhea rates also increased between 1998 and 2006, from 18.2 to 63.8 (per 100,000 population).

- Rates for First Nations persons were more than seven times that of non-First Nations persons for 1998 to 2006 combined.

- Newly diagnosed gonorrhea rates peaked between 20 and 29 years for males and between 15 and 24 years for females between 1998 and 2006 in Alberta.

- Northern Lights RHA had the highest rates of newly diagnosed gonorrhea of all RHAs, for both males and females.

- As with chlamydia, women were more likely than men to be diagnosed with gonorrhea in a physician's office.

- Over 40% of newly diagnosed gonorrhea infections in females between 1998 and 2006 were in Aboriginal women, compared with 19.3% of male cases.

- In 2006, 4.0% of newly diagnosed cases of gonorrhea were repeat infections within that year.

2.1 Executive Summary

Infectious and Congenital Syphilis

- From 2003 to 2006, the rate of newly diagnosed syphilis cases rose dramatically. In 2006, the rate was 6.7; there were 218 newly diagnosed syphilis cases in Alberta that year. More than two thirds of cases were male.
- For males, infectious syphilis diagnoses for 1998 to 2006 combined were at the highest rate between 20 and 59 years and peaked at 30 to 39 years. For females, the highest rates were for 15 to 29 year olds and the peak was between 20 and 24 years.
- Newly diagnosed rates of infectious syphilis for 1998 to 2006 were highest in the Edmonton area, though cases occurred across all regions.
- Physicians' offices were used as the treatment agency of infectious syphilis diagnosis more often for females than for males.
- Female cases of infectious syphilis were more likely than male cases to be of Aboriginal ethnicity. The percentage of cases that were Aboriginal was greatest in Northern Alberta.
- The rate ratios for First Nations to non-First Nations newly diagnosed cases of infectious syphilis were 3.4 and 19.5 for males and females, respectively.
- Repeat infectious syphilis cases diagnosed within a year of a previous infectious syphilis diagnosis were very rare.
- Nine cases of congenital syphilis occurred between 2005 and 2006, eight in the Edmonton area.

Non-Infectious Syphilis

- In 2006, there were 77 newly diagnosed cases of non-infectious syphilis in Alberta, for a rate of 2.4. There is a statistically non-significant increasing trend in the rate between 1998 and 2006.
- For males, non-infectious syphilis diagnoses for 1998 to 2006 combined were highest for age groups over 24 years. For females, the highest rates were for 25 to 29 year olds and 60+ years.
- Newly diagnosed rates of non-infectious syphilis for 1998 to 2006 were highest in the Calgary and Edmonton areas.
- Oriental/Asian and Aboriginal ethnicities made up a greater percentage of newly diagnosed non-infectious syphilis female cases than male cases, while Black and Caucasian ethnicities made up greater proportions of male than female cases. The percentage of cases that were Aboriginal was greatest in Northern Alberta.
- Newly diagnosed non-infectious syphilis rates for females were higher for First Nations women (2.2) than for non-First Nations women (1.2), while rates for males were lower for First Nations men (0.6) than for non-First Nations men (1.6).

2.1 Executive Summary

MPC and NGU

- Changes in case definitions for MPC and NGU mean that time trends cannot be evaluated for 1998 through 2006. In 2006, the rate of newly diagnosed cases was 16.0 (per 100,000 females) for MPC and 79.5 (per 100,000 males) for NGU.
- MPC and NGU cases peaked at 20 to 24 years of age.
- For 1998 to 2006 combined, both MPC and NGU newly diagnosed cases had the highest rates in Northern Lights RHA.
- For both MPC and NGU, physicians' offices were the most common treatment agency for diagnosis.
- Northern RHAs had the highest percentages of Aboriginal ethnicity MPC and NGU cases. East Central, Calgary, and Chinook RHAs had the highest percentages of Caucasian cases.
- The rate ratios for First Nations to non-First Nations newly diagnosed cases were 4.0 for MPC and 2.4 for NGU.
- For 1998 to 2006, about 2% of newly diagnosed MPC cases and 3% of NGU cases were repeat infections within a year.

PID

- PID cases decreased from 1998 to 2006. In 2006, the PID rate in Alberta was 782.9 (per 100,000 females 15 to 44 years old).
- PID rates were highest in women aged 30 to 34 for 1998 to 2006.
- The highest rates of PID occurred in northern RHAs and East Central RHA.
- The decrease in rates between 1998 and 2006 was greater for First Nations women than for non-First Nations women. By 2006, the First Nations to non-First Nations rate ratio was 1.9.

STI Co-Infections

- In 2006, 5.1% of newly diagnosed chlamydia cases were concurrently co-infected with gonorrhea, while 21.2% of newly diagnosed gonorrhea cases were co-infected with chlamydia.
- Newly diagnosed HIV/AIDS cases concurrently co-infected with syphilis comprised 5.2% of HIV/AIDS cases in 2006. In that year, 4.3% of newly diagnosed syphilis cases were concurrently co-infected with HIV/AIDS. For co-infections, syphilis cases included infectious, non-infectious and congenital cases.
- Predominant exposure categories for newly diagnosed HIV/AIDS cases co-infected with syphilis were heterosexual contact and men who have sex with men.
- Chlamydia/gonorrhea co-infections were more common in First Nations individuals than in non-First Nations individuals. Syphilis with HIV/AIDS co-infections did not vary with First Nations status.

3.
Introduction

3.1 Background

3.2 Methodology

3.1 Background

Blood-borne pathogen infections and sexually transmitted infections are an important focus for public health surveillance. The diseases resulting from these infections are widespread, have potentially severe or even lethal effects, and carry high social and economic costs. Alberta is undergoing rapid changes in demographic patterns of its population, including growing populations in age groups traditionally at higher risk for these infections. Surveillance of trends in blood-borne pathogen infections and sexually transmitted infections is crucial. The need to provide such surveillance in a timely and comprehensive manner formed the impetus for this report.

In producing this report, the goal was to provide high quality reporting of current trends in blood-borne pathogen and sexually transmitted infection rates in Alberta, to inform policy makers, program planners, researchers, practitioners, and the general public.

Three common blood-borne pathogens are reported on: Human Immunodeficiency Virus (HIV), hepatitis C virus (HCV), and acute infection with hepatitis B virus (HBV), as well as selected co-infections amongst these pathogens. A number of common sexually transmitted infections are also reported on, including chlamydia, gonorrhea, syphilis (congenital, infectious, and non-infectious), non-gonococcal urethritis (NGU), mucopurulent cervicitis (MPC), pelvic inflammatory disease (PID), and selected co-infections. While these infections do not comprise a complete list of all blood-borne or sexually transmitted infections, they were chosen because (with the exception of PID) they are reportable by law in Alberta. The reporting process ensures that consistent and reliable databases on these infections exist.

Epidemiological data and a brief description of the analyses are presented. A literature review of international and national data is coupled with analysis of pertinent Alberta data.

Individual sections for each of the pathogens are included. Each section begins with background information on the effects of the virus, the modes of transmission, available treatments, and international and Canadian data on infection rates. Alberta data follow, potentially including breakdowns by time, age groups, geographic areas, ethnicities, and exposure categories.

This report is new, having been formed from the combination of two previous reports: *Alberta Blood-borne Pathogens Surveillance Report 2003* and *Sexually Transmitted Infections (STI) Surveillance Report Alberta – 1998 to 2002* (and its update, *Sexually Transmitted Infections Statistical Report 2004)*. The current report updates the previous reports and provides a unified methodology and format. Periodic updates of the current report are planned.

3.2 Methodology

3.2.1 Reporting Process

In order to detect disease outbreak and prevent further spread of disease, physicians, regional health authorities, and laboratories are required by the Communicable Diseases Regulation of the *Public Health Act of Alberta* to report to public health officials the occurrence of certain communicable diseases.

All cases of HIV/AIDS, HCV, acute HBV, chlamydia, gonorrhea, syphilis, NGU, and MPC are notifiable diseases and are reported by the Regional Medical Officer of Health (MOH) to Alberta Health and Wellness (as well, chronic carriers of HBV were put under surveillance in Alberta on January 1, 2008). Specifically, client data for HIV/AIDS are reported to Alberta Health and Wellness on the Public Health Agency of Canada *HIV/AIDS Case Report* form (see form in Appendix 15.2). HCV and acute HBV cases are reported on the *NDR* form (see Appendix 15.3). Chlamydia, gonorrhea, syphilis, NGU, and MPC are reported on the Notification of Sexually Transmitted Infections form (see Appendix 15.4). Case definitions appear in Appendix 15.5.

Cases are confirmed by laboratory tests. When a test is positive, the lab notifies Alberta Health and Wellness and the RHA, and the data are entered into the CDRS. A partner notification nurse follows up with the infected person and contacts those at risk. The partner notification nurse completes the required documentation, which is submitted by the RHA to Alberta Health and Wellness. For HCV and HBV cases from Indian reserves, the First Nations and Inuit Health Branch of Health Canada submits documentation to Alberta Health and Wellness.

Only cases newly diagnosed in Alberta are included in this report. For some diseases it is the jurisdiction at the time of reporting of the infection that reports the disease, while for others reporting is done by the jurisdiction at time of diagnosis. A change of residence between diagnosis and reporting could result in higher or lower case counts. Furthermore, because reporting is based on province of residence, differences in notifiability across provinces, combined with inter-provincial migration between diagnosis and reporting, may have resulted in some missing cases.

Another possible source of under-reporting stems from former Citizenship and Immigration Canada practices. Until September 1, 2004, refugees and immigrants applying for entry into Canada on humanitarian grounds who were identified as HIV positive through medical screening were not required to be reported to provincial authorities as HIV positive. In January 2005, HIV testing became mandatory for all individuals seeking permanent residency status in Canada. Reporting of individuals with positive HIV test results who were entering Alberta began later that year. Individuals entering Alberta who are positive for syphilis are also reported by Citizenship and Immigration Canada.

3.2 Methodology

3.2.1 Reporting Process

PID, unlike the other infections in this report, is not a notifiable disease. PID cases may be diagnosed in a physician's office, in an ambulatory care facility such as an emergency room or day surgery facility, or in hospital (where the patient has been admitted as an inpatient) In order to assess PID rates, data from the three administrative databases that capture these diagnoses (fee-for-service claims, ambulatory care, and hospital inpatient files) were analyzed.

3.2 Methodology

3.2.2 Data Sources

The bulk of data in this report comes from the CDRS.

Communicable Disease Reporting System (CDRS)
Communicable disease case reports are centrally collected and maintained in the CDRS, which is a secure database managed by the Provincial Program Development and Disease Control Branch of Alberta Health and Wellness.

For each newly diagnosed case, the laboratory report is submitted from the Provincial Laboratory for Public Health (PLPH) or the MOH to the RHA that the patient resides in, and to the CDRS. A reporting form (*Notifiable Disease Report (NDR)* or *HIV/AIDS Case Report* or *Notification of Sexually Transmitted Infections*) is submitted to the CDRS by the RHA that the patient resides in (there is a legal requirement that notification occur). A case only becomes counted as a case in the CDRS upon receipt of both a confirmatory laboratory report and the relevant reporting form.

The CDRS has two systems. The *Notifiable Disease System* was the source for the HIV, AIDS, HCV, and HBV data used in this report. The *Sexually Transmitted Disease System* was the source of sexually transmitted infection data (excluding PID).

Prenatal screening data for HIV and HBV are provided.

Provincial Laboratory for Public Health (PLPH) Prenatal Screening Database
During routine prenatal care in Alberta, blood samples from pregnant women who access prenatal care are sent to the PLPH, where they are tested for HIV (unless declined by the patient), HBV, syphilis, rubella immunity and varicella immunity. Blood samples are also sent to the Canadian Blood Services (CBS) Laboratories, where they are tested for blood typing and Rh factors. (Prior to August 2002, prenatal screening was completed by the CBS, and confirmatory syphilis, HIV and HBV testing was done by the PLPH.) Prenatal screening data in the current report were extracted from the PLPH prenatal screening database.

The AHCIP registry was used to obtain populations for rate calculations, and to assign First Nations status to cases.

Alberta Health Care Insurance Plan (AHCIP) Registry
The Alberta Health Care Insurance Plan Registry was established to enable premium collection and assessment of registrant eligibility for services claimed by medical practitioners. The Alberta Stakeholder Registry Population Files are derived from the Alberta Health Care Insurance Plan Registry and were used to estimate the population of the province and geographic areas within the province. Information on First Nations status was also obtained from the Alberta Stakeholder Registry Population Files.

3.2 Methodology

3.2.2 Data Sources

The AHCIP Fee-For-Service Claims database, ACCS database, and hospital inpatient files were used in PID analyses.

Alberta Health Care Insurance Plan (AHCIP) Fee-For-Service Claims
The AHCIP registers Albertans for billable services and pays providers of those services (such as physicians). A detailed database of provider claims for payment is kept (the Fee-For-Service Claims database). Note that services provided by physicians in salaried positions are not included in this database. In this report, fee-for-service claims data were used for PID analyses.

Ambulatory Care Classification System (ACCS)
ACCS is a system for the collection and costing of data on facility-based ambulatory care, such as same-day surgery, day procedures, emergency room visits, and community rehabilitation program services occurring in publicly-funded facilities. In this report, ACCS data were used for PID analyses.

Hospital Inpatient (Morbidity) Files
Hospital morbidity data consist of one record for each inpatient separation (discharge, transfer, or death) in acute care hospitals in Alberta. Prior to 2002, inpatient data was collected by hospitals and directly submitted to the Canadian Institute for Health Information (CIHI). CIHI edited and delivered files to Alberta Health and Wellness. Alberta Health and Wellness performed certain edits and appended additional data elements. In April 2002, Alberta Health and Wellness implemented a new system for collecting inpatient data, the Morbidity and Ambulatory Care Abstracting Record (MACAR) system. In MACAR, the hospitals submit data directly to Alberta Health and Wellness and an edited file is then delivered from Alberta Health and Wellness to CIHI. In this report, hospital inpatient data were used for PID analyses.

3.2.3 Data Extraction, Cleaning and Linkage

HIV and **AIDS** data were extracted from the CDRS database. The data sets were checked for duplication by using form numbers, Personal Health Numbers (PHNs) and other demographic information. No duplicate records were found.

HCV and **Acute HBV** data were derived from two databases. The first database is an older version of the Notifiable Disease Records database that contains data from 1985 to July 1998. The second is the (newer) CDRS database that contains records from August 1998 to present. Duplication of records was checked using Notifiable Disease Report numbers, PHNs, and demographic information. All duplicated records were removed (93 HCV records).

Chlamydia, gonorrhea, syphilis, MPC, and NGU data were extracted from the STD section of the CDRS database. There were no duplicated records.

Data linkage: First Nations status
Ethnicity data for HCV, acute HBV, and sexually transmitted infections were incomplete. A linkage between all data sets and the Alberta Health Care Insurance Plan Registry was performed to obtain information on First Nations status (as a proxy for missing ethnicity data; see the First Nations Status description in Terms section of the Glossary). The linkage process involved the following two approaches:

- For records containing PHNs, PHNs were used for direct linkage.
- For records with missing PHN, deterministic linkage was performed using first and last name, date of birth, sex, and postal code.

Data linkage: Co-Infections
The record linkage process for co-infections was as follows:

- Link records for the two infections of interest by PHN
- If diagnosis dates of the two infections of interest differed by 30 days or less, concurrent co-infection status was assigned to that record for that co-infection.
- If the records contained diagnoses of the two infections of interest at any point between 1998 and 2006, cumulative co-infection status was assigned to that record for that co-infection.

3.2.4 Data Analysis

Data completeness and availability dictated that infections be analyzed for the following time periods:

- HIV: May 1998 to December 2006
- AIDS: January 1983 to December 2006
- AIDS Deaths: January 1986 to December 2006
- All remaining infections: January 1998 to December 2006

In order to increase reliability, *rates* for geographic areas were typically calculated for nine-year periods (e.g., 1998 to 2006). *Percentages* of cases were also typically calculated for nine-year periods.

Prenatal testing data for HIV and HBV were available from September 1998 to August 2007.

Cases of blood-borne pathogens were categorized by year, sex, age group, geographic area, ethnicity, First Nations status, and exposure category (for HIV/AIDS), as appropriate and possible (see Glossary).

Cases of sexually transmitted infections and PID were categorized by year, sex, age group, RHA or region (see Appendix 15.1), treatment agency, ethnicity, First Nations status, and repeat infections, as appropriate and possible.

Analyses included calculation of percentages, means, rates of newly diagnosed cases (per 100,000 population), and age-adjusted rates of newly diagnosed cases (per 100,000 population), as appropriate.

Trend tests were applied, as appropriate, for comparisons.

Data analysis was performed using SAS 9.12. Tables were generated in Microsoft Excel and figures were generated in SigmaPlot 9.0.

3.2.5 Data Limitations

Data appearing in this report are subject to a number of limitations, and all readers are encouraged to consider this section carefully.

Newly diagnosed cases
Our data are based on newly diagnosed cases. Diagnosis date was used to classify cases according to years and age groups, except for acute HBV cases, for which onset date (onset of symptoms) was used. Not all infected persons are tested or reported for various reasons, including fear of learning positive results, complacency, lack of follow-up, etc. Asymptomatic cases are especially likely to be under-diagnosed, as they are less likely to be tested. There is a delay between infection and diagnosis, resulting in some variability in year of reporting. There is underreporting of AIDS cases previously reported as HIV cases. Cases that were diagnosed before infections were reportable (and that were not reported at a later date) are not included.

Newly diagnosed cases do not reflect incidence or prevalence of disease in the population. Because HIV and HCV became reportable only in 1998, some cases diagnosed before those dates were not reported. In addition, infections diagnosed and reported outside of Alberta are not included. Some of the burden of disease is thus not represented here.

Missing data
Appendix 15.6 provides the percentage of cases with missing data on the variables appearing in this report, as well as on the demographic variables used to link databases, for each pathogen/syndrome. Data based on variables with large amounts of missing data should be interpreted with caution, as they may not be representative of the population being described.

Small numbers of cases
In many cases, especially when data were stratified by sex, age, geographic area, ethnicity/Aboriginal ethnicity/First Nations status, or exposure category, categories contained small numbers of cases. Caution must be taken in interpretation of these numbers, as they may not be reliable. Some rates were not reported due to low reliability.

Anonymous reporting
For HIV/AIDS data, anonymous testing is available in the three STD clinics in the province, but use of this type of testing is uncommon. Anonymous case reporting was possible prior to January, 2005, when nominal reporting was instituted. This anonymity limited our ability to perform data linkage due to missing values on demographic variables.

Case definitions
Case definitions evolve over time, and there is resulting variability in diagnoses. Blood-borne pathogen and sexually transmitted infection cases are diagnosed by clinical assessment and laboratory testing. Case definitions are found in Appendix 15.5. Note that testing algorithms for acute HBV may vary slightly from the case definition across regions.

3.2.5 *Data Limitations*

Delays in the reporting process
For almost all cases reported to CDRS, there was a delay between reporting date (the date that Alberta Health and Wellness received the *NDR*) and diagnosis date (the date of diagnosis, from the *NDR*). There are lags involved in presentation of the client to the health care provider, laboratory confirmation, client follow-up, and completion of case reports. Loss of clients to follow-up represents another important limitation; this represents a minority of cases. Clients may be tested and found to be positive but fail to return for follow-up care and treatment. This is particularly problematic in the case of transient and homeless clients.

First Nations status
Data on ethnicity were incomplete for HCV, acute HBV, and sexually transmitted infections (see Appendix 15.6). In order to determine First Nations status for cases, data from the Communicable Disease Registry System were linked to data in Alberta Health Care Insurance Plan Registry. Not all cases could be linked (see Data Extraction, Cleaning and Linkage section). It must also be stressed that this population does not include all Aboriginal persons. Furthermore, the First Nations indicator in the Alberta Health Care Insurance Plan Registry is not a perfect measure of status as a First Nations individual; some First Nations individuals may not be recorded as such, and some non-First Nations individuals may be classified as First Nations (see First Nations Status term in the Terms section of the Glossary).

First Nations individuals make up about 4.7% of the Alberta population. Rates should be interpreted in light of this fact; the First Nations population is generally over-represented in rates of blood-borne and sexually transmitted infections.

Geographic area rates should also be interpreted in light of the fact that First Nations populations vary greatly by geographic area (see Appendix 15.7). For 1998 to 2006 combined, the proportion of the population that was First Nations status was higher than the provincial average in Northern Lights, Aspen, Peace Country, Chinook, and David Thompson RHAs, with particularly high proportions in Northern Lights and Aspen RHAs. The proportion of the population that was First Nations status was lower than the provincial average in Palliser, East Central, Calgary, and Capital Health RHAs. For regional analyses, Northern Alberta has a high proportion of First Nations status individuals compared to other regions.

Deaths
AIDS deaths reported include only those that were reported as *caused by* AIDS. AIDS likely *contributed to* more deaths than are reported.

Previously published data
Data in this report may differ from that previously published due to differences in methodology and/or dates of data extraction.

4.

HIV/AIDS

4.1 Fundamentals

4.2 National and International Data

4.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

Alberta

4.1 Fundamentals

HIV infection causes destruction of T-lymphocytes (T-cells), which are fundamental to the operation of the immune system. The resultant immune suppression leaves HIV-infected persons vulnerable to opportunistic infections and malignancies.

Initial infection with HIV is often asymptomatic and can remain so for over 10 years.

About half of newly infected individuals have no symptoms and the other half may experience symptoms similar to mononucleosis, such as fever, headache, lymphadenopathy, myalgia, or rash. [4] Following initial infection without treatment, the chronic stage of HIV infection with no clinical symptoms or mild illnesses lasts for a median of over 10 years.[5] This stage is dramatically shorter (one to two years) in some cases, or much longer for about 5% of individuals.

The occurrence of opportunistic diseases signals the onset of AIDS.

The final stage of HIV infection is the development of AIDS. AIDS as a distinct syndrome was first recognized in 1981, prior to the identification of HIV in 1983. AIDS has been a reportable disease in Alberta since 1983. AIDS is defined by the onset of specified opportunistic diseases in the presence of HIV infection. [6] These diseases include (but are not limited to) *Pneumocystis jirovecii* pneumonia, candidiasis, and Kaposi's sarcoma.

HAART's success means that there are many more people living with HIV than in the early days of the disease's spread.

Infectivity is high during the initial period after infection and increases with increasing immune deficiency, the presence of clinical symptoms and the presence of other sexually transmitted infections. [4,5,7] There is no vaccine for the prevention of HIV infection. Highly active anti-retroviral therapy (HAART) has been used for the treatment of HIV infection since 1996. HAART delays the onset of AIDS, thus prolonging the survival of HIV-infected persons and making HIV infection a more manageable, although chronic, condition. However, there is still no cure for HIV infection.

For detailed case definitions of HIV and AIDS, see Appendix III.

HIV can be transmitted sexually, intravenously, or from mother to child.

HIV infection occurs when an infected body fluid enters the body through a break in the skin (including an injection) or through mucous membranes. Transmission of HIV is mainly through three modes: sexual contact, injection (intravenous, intramuscular, or other) and mother-to-child (vertical transmission). Sexual transmission occurs through both heterosexual and homosexual contact. Percutaneous transmission can occur through sharing of needles and other drug paraphernalia, or tattooing or body piercing. Transmission through blood transfusion or use of blood products occurred in the past but has been virtually eliminated in developed countries. Mother-to-child transmission can occur during pregnancy, delivery, or via breast-feeding. The risk of transmission is greatly reduced when antiretroviral drugs are used before and during delivery and are provided to the infant following birth. Cesarean section also has the potential to reduce mother-to-child transmission of HIV.

4.1 Fundamentals

In Alberta, all pregnant women who receive prenatal care are screened for HIV unless they choose not to be.

In Alberta, post-exposure prophylaxis is offered to infants born to mothers with HIV infection, to recipients of high-risk blood and body fluid exposures, and to sexual assault victims. A prenatal screening program for HIV was established in Alberta in September 1998. All pregnant women who present for prenatal care are screened for HIV infection unless the women decline testing (i.e., it is an "opt-out" program). The success of this program in increasing testing rates has been documented.[8]

In Alberta, confirmed cases of HIV infection and AIDS have been reportable to Provincial Program Development and Disease Control at Alberta Health and Wellness since May 1998 and 1983, respectively. Note that many HIV cases were diagnosed prior to May 1998 but not reported to the CDRS; these cases do not appear in this report. Much of the burden of HIV/AIDS in Alberta is represented by these earlier cases. Individuals diagnosed with HIV prior to relocating to Alberta are also not included in this report.

4.2 *National and International Data*

In December 2006, an estimated 39.5 million people worldwide were living with HIV, with 4.3 million new infections and 2.9 million AIDS deaths in 2006. [10]

Worldwide, about one in every 100 people is infected with HIV. About two in every 1,000 people are infected in Canada.

The absolute number of people living with HIV is growing in all regions of the world, although the worldwide prevalence rate appears stable at 1.0% of the population in 2006. [10] In Canada, an estimated 58,000 people were living with HIV in 2005, or about 0.18%. [11]

There were 2,558 positive HIV tests reported in Canada in 2006, or 7.8 per 100,000 people. This rate was stable between 2000 and 2006. Women accounted for more than one quarter of positive HIV tests in 2006. [12,13]

The rate of newly reported AIDS cases is decreasing in Canada. In 2006, there were 255 new cases of AIDS reported (0.9 per 100,000 people). Up to December 2006, 20,426 AIDS cases had been reported in Canada. [12,13]

In Canada, new HIV infections occur most often in the 30 to 39 year old age group.

Worldwide, new HIV infections are most common among 15 to 24 year olds. [10] In Canada, the highest rates of new HIV infection in 2005 were among 30 to 39 year olds (19.0 per 100,000), followed by 40 to 49 year olds (13.6 per 100,000) and 20 to 29 year olds (11.2 per 100,000). Rates among persons 19 and under or over 49 were a fraction of those among 20 to 49 year olds. [12,13]

Positive HIV tests tend to occur at younger ages for women than for men in Canada. Reports of AIDS cases in Canada are most common among 30 to 49 year olds. [13]

Men who have sex with men form the largest exposure category for new HIV cases in Canada, followed closely by heterosexual contact.

The largest number of positive HIV tests in Canada in 2006 was among men who have sex with men (39.6% of cases). Heterosexual contact was the next most common exposure group (31.9%), followed by injection drug users (19.3%). Among persons newly diagnosed with AIDS, heterosexual contact was the most common exposure group (35.8% of cases), followed by injection drug users (30.9%) and men who have sex with men (28.4%). [13]

Persons with aboriginal ancestry are overrepresented in the HIV-positive population; they accounted for 27.3% of positive HIV tests in Canada in 2006. [13]

AIDS death rates are down in Canada, largely due to improved treatments for HIV (such as HAART).

Deaths due to AIDS in Canada have declined markedly since peaking in the mid 1990s. In 2006, there were 34 deaths attributed to AIDS, compared with 1,500 in 1995. In 2006, 71% of deaths due to AIDS were males, compared with 93% in 1995. [13]

4.3 Alberta HIV/AIDS Data

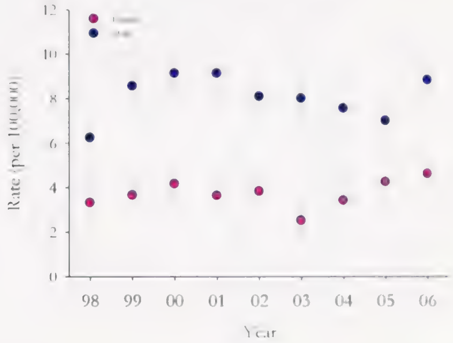
The HIV rate shows no time trend from 1998 to 2006.

Males are diagnosed with HIV more frequently than females.

There is no time trend in the AIDS rate between 1998 and 2006.

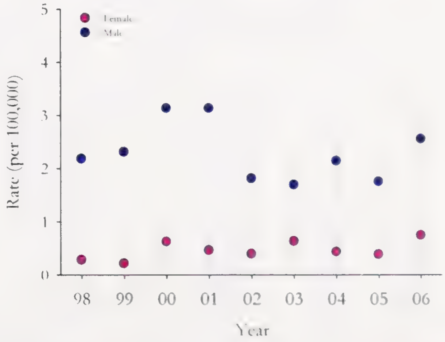
Time Trends (see Tables 4.3.1, 4.3.2)

Age-Adjusted Rate of Newly Reported HIV Cases by Sex, Alberta, 1998* - 2006



- There was no statistically significant time trend in the rate of newly diagnosed HIV infections in Alberta from 1998 to 2006.
- The rate for males was consistently higher than that for females. In 2006, there were 73 newly diagnosed HIV infections in females in Alberta, and 147 in males. The rates were 4.6 and 8.8 (per 100,000 people) for females and males, respectively.
- There were 220 newly diagnosed HIV cases in Alberta in 2006.

Age-Adjusted Rate of Newly Reported AIDS Cases by Sex, Alberta, 1998 - 2006



- The rate of newly diagnosed AIDS cases did not vary significantly with time between 1998 and 2006.
- The AIDS rate was generally more than three times higher in males than in females in Alberta between 1998 and 2006.
- In 2006, there were 12 newly diagnosed female AIDS cases (for a rate of 0.7 per 100,000), and 44 male cases (2.6 per 100,000).

4.3 Alberta HIV/AIDS Data

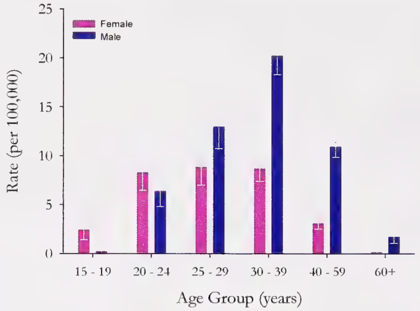
Newly diagnosed HIV infections are more frequent in males than in females from the age of 25 on.

The highest HIV rate occurs in males 30 to 39 years of age.

Between 1998 and 2006, more than 70% of newly diagnosed AIDS cases occurred in 30 to 59 year old males.

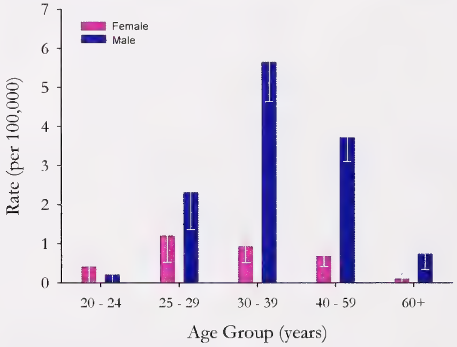
Age Groups (see Tables 4.3.3, 4.3.4)

Rate of Newly Reported HIV Cases by Sex and Age Group, Alberta, 1998* - 2006 Combined



- Between 1998 and 2006, the rate of newly diagnosed HIV infections peaked at 30 to 39 years for males (20.2 per 100,000 males), followed by high rates for 25 to 29 and 40 to 59 year olds.
- Rates were lower for females than for males in all age groups except 15 to 24 year olds. The highest rates for females occurred between 20 and 39 years (from 8.3 to 8.8 per 100,000 females).

Rate of Newly Reported AIDS Cases by Sex and Age Group, Alberta, 1998 - 2006 Combined



- For the 1998 to 2006 time period, the rate of newly diagnosed AIDS cases for males was highest at 30 to 39 years old (5.6 per 100,000 males), followed by 40 to 59 years old.
- For females, AIDS rates were slightly (but not significantly) higher for 25 to 29 year olds (1.2 per 100,000 females) than for other age groups.

4.3 Alberta HIV/AIDS Data

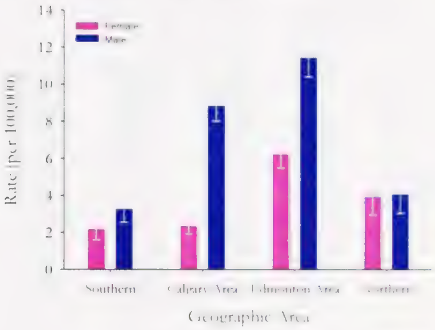
The Edmonton area had the highest rates of new HIV infections for both males and females from 1998 to 2006.

Sex differences were prominent in the Edmonton and Calgary areas.

The Calgary area had more than half of all newly diagnosed AIDS cases between 1998 and 2006.

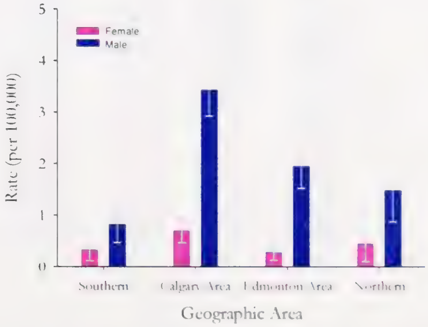
Geographic Areas (see Tables 4.3.5, 4.3.6)

Age-Adjusted Rate of Newly Reported HIV Cases by Sex and Geographic Area, Alberta, 1998* - 2006 Combined



- For 1998 to 2006 combined, the male rate of newly diagnosed HIV infections was highest in the Edmonton area (11.4 per 100,000 males; 489 cases), followed by the Calgary area (8.8; 450 cases).
- For females, the rate was highest in the Edmonton area (6.2 per 100,000 females), followed by Northern Alberta (3.9).
- The percentage of newly diagnosed HIV cases that was male varied from 50.0% in Northern Alberta to 79.2% in the Calgary area.

Age-Adjusted Rate of Newly Reported AIDS Cases by Sex and Geographic Area, Alberta, 1998 - 2006 Combined



- The male newly diagnosed AIDS rate for 1998 to 2006 combined was highest in the Calgary area (3.4 per 100,000). There were 177 newly diagnosed male AIDS cases in the Calgary area during that time period.
- The rate of newly diagnosed female AIDS cases was slightly (but not statistically significantly) higher in the Calgary area (0.7) than in the other areas.

4.3 Alberta HIV/AIDS Data

HIV-positive males in Alberta typically acquire the disease through sex with males or injection drug use.

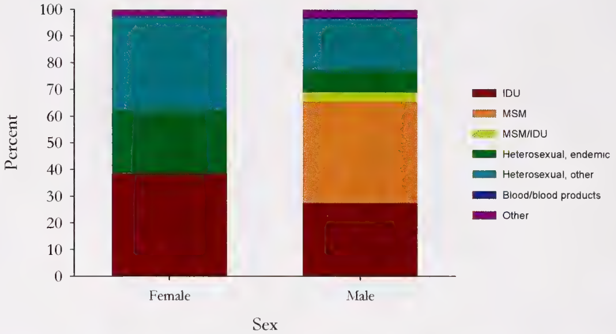
Females in Alberta most often acquire HIV through heterosexual contact or injection drug use.

The proportion of male cases attributed to men who have sex with men is lower for new HIV infections than for AIDS cases.

For females, the proportions of injection drug users and women who have sex with men from areas where HIV is endemic are higher for newly diagnosed HIV infections than for AIDS cases.

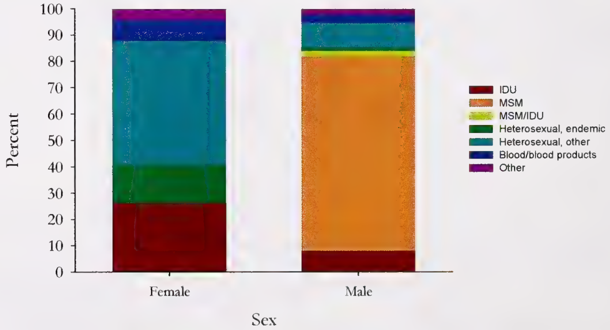
Exposure Categories (see Tables 4.3.7, 4.3.8)

Percent of Newly Reported HIV Cases by Sex and Exposure Category, Alberta, 1998* - 2006 Combined



- For 1998 to 2006 combined, injection drug users and men who have sex with men accounted for 69% of newly diagnosed HIV infections in males. Heterosexual transmission accounted for a further 27.4% of new cases.
- For females, heterosexual contact (58.9%) and injection drug use (38.5%) accounted for the large majority of cases.
- Between 1998 and 2006, the percentage of newly reported HIV cases with transmission via heterosexual contact with a person from a country where HIV is endemic increased over time, while the percentage due to injection drug use decreased.

Percent of Newly Reported AIDS Cases by Sex and Exposure Category, Alberta, 1983 - 2006 Combined



- From 1983 to 2006, newly diagnosed AIDS cases were dominated by men who have sex with men (73.7%).
- Newly diagnosed cases of AIDS in females were predominantly attributed to heterosexual contact (61.4%) and injection drug use (26.3%).

4.3 Alberta HIV/AIDS Data

The Calgary area has a higher rate than other regions of HIV exposure via men who have sex with men.

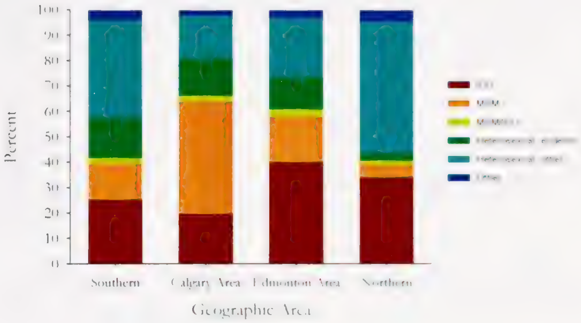
Exposure to HIV through injection drug use is more common in the Edmonton area than in the other areas of Alberta.

Geographic differences in exposure categories for newly diagnosed cases of AIDS are not large. The Calgary area has a greater percentage of exposure through men who have sex with men, and exposure through heterosexual contact is more common in Northern Alberta than in other regions.

Exposure Categories by Geographic Areas

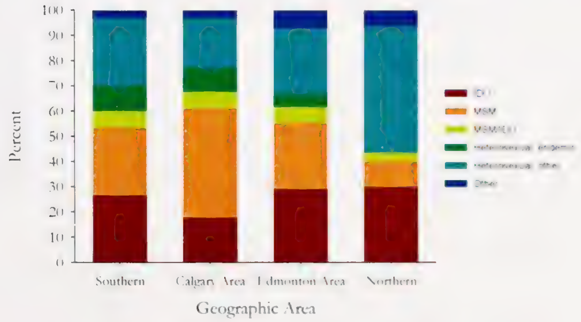
(see Tables 4.3.9, 4.3.10)

Percent of Newly Reported
HIV Cases by Geographic Area and
Exposure Category, Alberta, 1998* - 2006 Combined



- From 1998 to 2006, the percentage of newly diagnosed HIV infections attributed to injection drug use was highest in the Edmonton area (40.2%) and Northern Alberta (34.1%).
- The percentage of newly diagnosed HIV cases in men who have sex with men was highest in the Calgary area (44.4%). Northern Alberta had the lowest percentage of exposure via heterosexual contact with a person from an area where HIV is endemic (3.2%).

Percent of Newly Reported
AIDS Cases by Geographic Area and
Exposure Category, Alberta, 1998 - 2006 Combined



- For newly diagnosed AIDS cases between 1998 and 2006, exposure through injection drug use was least common in the Calgary area (17.8%), while exposure among men who have sex with men was highest in the Calgary area (43.2%).
- The percentage of exposures through heterosexual contact was highest in Northern Alberta (50.0%).

4.3 Alberta HIV/AIDS Data

Caucasians form the largest ethnic group among newly diagnosed HIV infections in all regions except Northern Alberta.

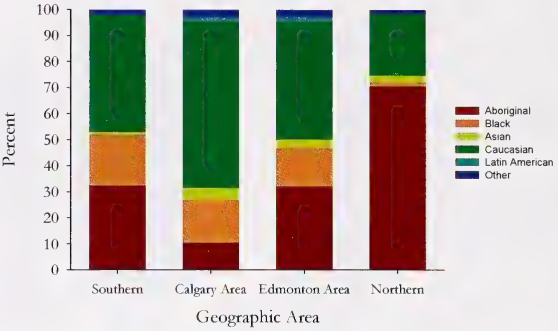
The percentage of newly diagnosed HIV infections of Aboriginal ethnicity is very high in Northern Alberta.

Newly diagnosed AIDS cases show similar ethnicity patterns to those seen in HIV cases.

There are fewer Aboriginal and Black cases among newly diagnosed AIDS cases than among newly diagnosed HIV cases.

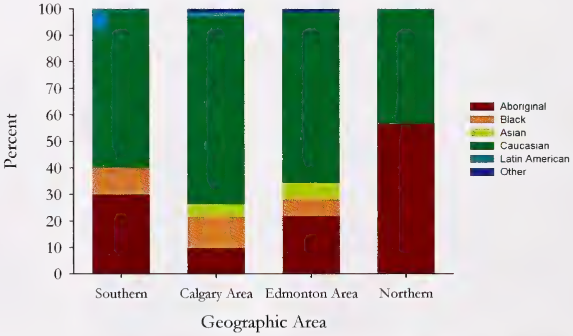
Ethnicity by Geographic Areas (see Tables 4.3.11 and 4.3.12)

Percent of Newly Reported
HIV Cases by Geographic Area and
Ethnicity, Alberta, 1998* - 2006 Combined



- The percentage of Caucasians among newly diagnosed HIV infections was highest in the Calgary area between 1998 and 2006 (64.1%).
- Northern Alberta (where a higher proportion of the population is Aboriginal) had a notably high percentage of Aboriginal ethnicity HIV cases (70.6%), with lower numbers of Caucasian and Black cases than other parts of Alberta.

Percent of Newly Reported
AIDS Cases by Geographic Area and
Ethnicity, Alberta, 1998 - 2006 Combined



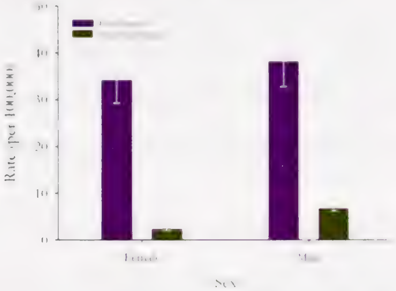
- Ethnicity data for newly diagnosed AIDS cases in the geographic areas were fairly similar to HIV ethnicity data.
- There were generally fewer newly diagnosed Black and Aboriginal AIDS cases than new HIV infections, reflecting the recent trend toward increased infection rates in these groups. The percentage of Caucasian cases was consequently somewhat higher in AIDS cases than in HIV cases.

4.3 *Alberta HIV/AIDS Data*

First Nations individuals are significantly over represented among newly diagnosed HIV cases.

First Nations Status by Sex (see Table 4.3.13, 4.3.14)

Age Adjusted Rate of Newly Reported
HIV Cases by Sex and First Nations Status,
Alberta, 1998* - 2006 Combined



- The 1998 to 2006 combined rate of newly diagnosed HIV infections was markedly higher in First Nations than in Non-First Nations individuals.
- For males, the First Nations rate was 38.1 (per 100,000 First Nations males), compared with 6.7 in non-First Nations males. This is a rate ratio of 5.7 to 1. For females, the First Nations rate was 34.1 (per 100,000 First Nations males), compared with 2.3 in non-First Nations females. This is a rate ratio of 14.8 to 1.
- For 1998 to 2006, 26.5% of HIV cases were First Nations, although only 4.7% of the population was First Nations.

Prenatal screening for HIV is nearly universal. In 2006, 97.0% of women receiving prenatal care in Alberta were screened for HIV.

Each year, approximately 1 positive HIV test occurs for every 2,000 live births to pregnant women receiving prenatal care.

Prenatal Screening for HIV (see Table 4.3.15)

- Almost all women who received prenatal care in Alberta were screened for HIV infection between 1998 and 2006.
- The percentage of pregnant women screened increased from 92.2% to 97.0% from 1998 to 2006.
- For 1998 to 2006 combined, 0.5 pregnant women tested positive for HIV for every 1,000 live births in Alberta. There were 32 pregnant women who tested positive for HIV in 2006.
- Note that prenatal screening data include both newly diagnosed and previously diagnosed infections.

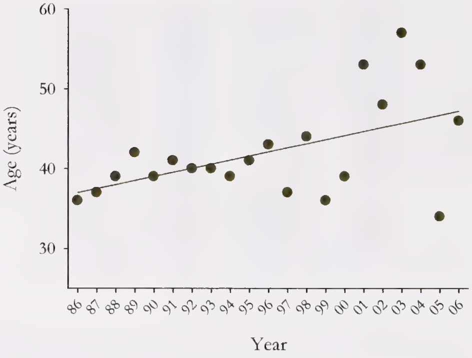
4.3 Alberta HIV/AIDS Data

The number of deaths among people living with AIDS has declined markedly since peaking in 1994.

Mean age at death in people living with AIDS increased between 1986 and 2006.

AIDS Deaths (see Table 4.3.16)

Mean Age at Death Among People Living with AIDS by Year, Alberta, 1986 - 2006



- AIDS deaths are becoming less common in Alberta, at least partially due to improved treatments. The number of deaths peaked in 1994 at 93. In each of 2005 and 2006, there was one reported death caused by AIDS in Alberta.
- Mean age at death for deaths caused by AIDS has increased from 1986 to 2006. In 1986, the mean was 36 years. From 2001 on, with the exception of 2005, the mean has been 46 years or older. The mean is much more variable in recent years due to the small number of deaths.
- These data include only deaths listed as caused by AIDS; AIDS likely contributed to more deaths than those reported as caused by AIDS.

Limitations and Methodology Notes

* HIV became reportable as of May 1998, so 1998 data may be incomplete.

Case definitions for HIV and AIDS appear in Appendix 15.5.

Exposure categories and ethnic groups are defined in the Glossary.

HIV and AIDS data are presented by geographic area rather than by individual RHAs because of the small numbers of cases in some RHAs.

Under-reporting of AIDS cases has been anecdotally reported in Alberta, and the level of under-reporting likely varies by region.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 4.3.1. Newly Diagnosed HIV Cases and Rates by Sex and Year, Alberta, 1998* to 2006

Female	**1998***	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	47	53	61	54	57	39	54	66	73	504
% female cases[1]	34.8	30.1	31.6	30.7	31.5	24.4	31.2	37.5	33.2	31.7
Rate (per 100,000 females)	3.3	3.6	4.1	3.6	3.7	2.5	3.4	4.1	4.4	3.6
Age-adjusted rate[3]	3.3	3.7	4.2	3.6	3.8	2.5	3.4	4.3	4.6	3.7
Standard error of adjusted rate (SE)	0.49	0.51	0.54	0.50	0.51	0.41	0.47	0.53	0.55	0.17
Male	**1998***	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	88	123	132	122	124	121	119	110	147	1,086
% male cases[1]	65.2	69.9	68.4	69.3	68.5	75.6	68.8	62.5	66.8	68.3
Rate (per 100,000 males)	6.2	8.4	8.9	8.1	8.0	7.7	7.5	6.8	8.9	7.9
Age-adjusted rate[3]	6.3	8.6	9.1	8.3	8.1	8.0	7.6	7.0	8.8	8.0
Standard error of adjusted rate (SE)	0.67	0.78	0.80	0.76	0.73	0.74	0.70	0.68	0.74	0.24
All[2]	**1998***	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	135	176	193	176	181	160	173	176	220	1,590
Rate (per 100,000 population)	4.7	6.0	6.5	5.8	5.9	5.1	5.4	5.5	6.7	5.7
Age-adjusted rate[3]	4.8	6.1	6.6	6.0	6.0	5.3	5.5	5.6	6.7	5.9
Standard error of adjusted rate (SE)	0.41	0.46	0.48	0.45	0.45	0.42	0.42	0.43	0.46	0.15

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.
1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction

Table 4.3.2 Newly Diagnosed AIDS Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	4	3	9	7	6	10	7	6	12	64
% female cases[1]	11.4	8.3	16.4	15.9	17.1	28.6	17.9	17.6	21.4	17.3
Rate (per 100,000 females)	0.3	0.2	0.6	0.5	0.4	0.6	0.4	0.4	0.7	0.5
Age-adjusted rate[3]	0.3	0.2	0.6	0.5	0.4	0.6	0.4	0.4	0.7	0.7
Standard error of adjusted rate (SE)	0.15	0.14	0.21	0.18	0.17	0.21	0.17	0.16	0.22	0.22
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	31	33	46	37	29	25	32	28	44	305
% male cases[1]	88.6	91.7	83.6	84.1	82.9	71.4	82.1	82.4	78.6	82.7
Rate (per 100,000 males)	2.2	2.3	3.1	2.5	1.9	1.6	2.0	1.7	2.7	2.2
Age-adjusted rate[3]	2.2	2.3	3.1	2.6	1.8	1.7	2.1	1.8	2.6	2.6
Standard error of adjusted rate (SE)	0.40	0.41	0.47	0.43	0.34	0.34	0.39	0.34	0.39	0.39
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	35	36	55	44	35	35	39	34	56	369
Rate (per 100,000 population)	1.2	1.2	1.9	1.5	1.1	1.1	1.2	1.1	1.7	1.3
Age-adjusted rate[3]	1.2	1.3	1.9	1.5	1.1	1.2	1.3	1.1	1.7	1.7
Standard error of adjusted rate (SE)	0.21	0.21	0.25	0.23	0.19	0.20	0.21	0.19	0.22	0.22

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction

Table 4.3.3. Newly Diagnosed HIV Cases and Rates by Sex and Age Group, Alberta, 1998* to 2006 Combined

Female	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Newly diagnosed cases	0	2	0	0	24	82	88	187	118	3
% female cases[1]	0.0	66.7	-	-	92.3	56.2	40.6	30.2	21.7	9.1
Rate (per 100,000 females)	-	0.3	-	-	2.4	8.3	8.8	8.7	3.1	0.1
Standard error (SE)	-	0.2	-	-	0.5	0.9	0.9	0.6	0.3	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	1	1	0	0	2	64	129	433	426	30
% male cases[1]	100.0	33.3	-	-	7.7	43.8	59.4	69.8	78.3	90.9
Rate (per 100,000 males)	0.6	0.1	-	-	0.2	6.4	12.9	20.2	10.9	1.7
Standard error (SE)	0.6	0.1	-	-	0.1	0.8	1.1	1.0	0.5	0.3
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	1	3	0	0	26	146	217	620	544	33
Rate (per 100,000 population)	0.3	0.2	-	-	1.3	7.3	10.9	14.4	7.0	0.9
Standard error (SE)	0.3	0.1	-	-	0.2	0.6	0.7	0.6	0.3	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.
1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.4 Newly Diagnosed AIDS Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Newly diagnosed cases	0	0	0	0	0	4	12	20	26	2
% female cases[1]	-	-	-	-	-	66.7	34.3	14.2	15.2	13.3
Rate (per 100,000 females)	-	-	-	-	-	0.4	1.2	0.9	0.7	0.1
Standard error (SE)	-	-	-	-	-	0.2	0.3	0.2	0.1	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	1	0	0	2	23	121	145	13
% male cases[1]	-	-	100.0	-	-	33.3	65.7	85.8	84.8	86.7
Rate (per 100,000 males)	-	-	0.1	-	-	0.2	2.3	5.6	3.7	0.7
Standard error (SE)	-	-	0.1	-	-	0.1	0.5	0.5	0.3	0.2
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	1	0	0	6	35	141	171	15
Rate (per 100,000 population)	-	-	0.1	-	-	0.3	1.8	3.3	2.2	0.4
Standard error (SE)	-	-	0.1	-	-	0.1	0.3	0.3	0.2	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.5. Newly Diagnosed HIV Cases and Rates by Sex and Region, Alberta, 1998* to 2006 Combined

Female	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	58	118	265	63	504
% female cases[2]	40.8	20.8	35.1	50.0	31.7
Rate (per 100,000 females)	2.0	2.4	6.1	3.8	3.6
Age-adjusted rate[4]	2.2	2.3	6.2	3.9	3.7
Standard error of adjusted rate (SE)	0.3	0.2	0.4	0.5	0.2

Male	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	84	450	489	63	1,086
% male cases[2]	59.2	79.2	64.9	50.0	68.3
Rate (per 100,000 males)	2.9	9.1	11.4	3.7	7.9
Age-adjusted rate[4]	3.3	8.8	11.4	4.1	8.0
Standard error of adjusted rate (SE)	0.4	0.4	0.5	0.5	0.2

All[3]	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	142	568	754	126	1,590
Rate (per 100,000 population)	2.5	5.7	8.7	3.8	5.7
Age-adjusted rate[4]	2.7	5.6	8.8	4.0	5.9
Standard error of adjusted rate (SE)	0.2	0.2	0.3	0.4	0.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Alberta total contains unknown region cases.
2. Percent of all cases that were of a given sex, for a given region (column percent).
3. Includes cases with sex missing.
4. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction

Table 4.3.6 Newly Diagnosed AIDS Cases and Rates by Sex and Region, Alberta, 1998 to 2006 Combined

Female	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	9	36	12	7	64
% female cases[2]	30.0	16.9	12.5	23.3	17.3
Rate (per 100,000 females)	0.3	0.7	0.3	0.4	0.5
Age-adjusted rate[4]	0.3	0.7	0.3	0.5	0.5
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.1
Male	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	21	177	84	23	305
% male cases[2]	70.0	83.1	87.5	76.7	82.7
Rate (per 100,000 males)	0.7	3.6	2.0	1.3	2.2
Age-adjusted rate[4]	0.8	3.4	2.0	1.5	2.2
Standard error of adjusted rate (SE)	0.2	0.3	0.2	0.3	0.1
All[3]	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	30	213	96	30	369
Rate (per 100,000 population)	0.5	2.2	1.1	0.9	1.3
Age-adjusted rate[4]	0.6	2.1	1.1	1.0	1.4
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
2. Percent of all cases that were of a given sex, for a given region (column percent).
3. Includes cases with sex missing.
4. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.7. Newly Diagnosed HIV Cases and Percents by Exposure Category and Sex, Alberta, 1998* to 2006 Combined

	Female	Male	All[1]
MSM			
Cases	**0**	**412**	**412**
% of cases[2]	**0.0**	**37.9**	**25.9**
MSM/IDU			
Cases	**0**	**37**	**37**
% of cases[2]	**0.0**	**3.4**	**2.3**
IDU			
Cases	**194**	**300**	**494**
% of cases[2]	**38.5**	**27.6**	**31.1**
Heterosexual contact			
Endemic			
Cases	**120**	**92**	**212**
% of cases[2]	**23.8**	**8.5**	**13.3**
Partner at risk			
Cases	**105**	**85**	**190**
% of cases[2]	**20.8**	**7.8**	**11.9**
Blood/Clotting Factor			
Cases	**0**	**1**	**1**
% of cases[2]	**0.0**	**0.1**	**0.1**
Mother-to-Child/Pediatric			
Cases	**2**	**2**	**4**
% of cases[2]	**0.4**	**0.2**	**0.3**
Occupational exposure			
Cases	**0**	**2**	**2**
% of cases[2]	**0.0**	**0.2**	**0.1**
NIR - Heterosexual			
Cases	**72**	**121**	**193**
% of cases[2]	**14.3**	**11.1**	**12.1**
Unknown			
NIR - Other			
Cases	**3**	**25**	**28**
% of cases[2]	**0.6**	**2.3**	**1.8**
Unknown			
Cases	**8**	**9**	**17**
% of cases[2]	**1.6**	**0.8**	**1.1**

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Includes cases with sex missing.
2. Percent of all cases that were assigned to a given exposure category, for a given sex (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.8. Newly Diagnosed AIDS Cases and Percents by Exposure Category and Sex, Alberta, 1983 to 2006 Combined

	Female	Male	All[1]
MSM			
Cases	**0**	**879**	**879**
% of cases[2]	**0.0**	**73.7**	**67.3**
MSM/IDU			
Cases	**0**	**25**	**25**
% of cases[2]	**0.0**	**2.1**	**1.9**
IDU			
Cases	**30**	**97**	**127**
% of cases[2]	**26.3**	**8.1**	**9.7**
Heterosexual contact			
Endemic			
Cases	**17**	**18**	**35**
% of cases[2]	**14.9**	**1.5**	**2.7**
Partner at risk			
Cases	**12**	**25**	**37**
% of cases[2]	**10.5**	**2.1**	**2.8**
Blood/Clotting Factor			
Cases	**9**	**37**	**46**
% of cases[2]	**7.9**	**3.1**	**3.5**
Mother-to-Child/Pediatric			
Cases	**4**	**3**	**7**
% of cases[2]	**3.5**	**0.3**	**0.5**
Occupational exposure			
Cases	**0**	**0**	**0**
% of cases[2]	**0.0**	**0.0**	**0.0**
NIR - Heterosexual			
Cases	**41**	**83**	**124**
% of cases[2]	**36.0**	**7.0**	**9.5**
Unknown			
NIR - Other			
Cases	**0**	**6**	**6**
% of cases[2]	**0.0**	**0.5**	**0.5**
Unknown			
Cases	**1**	**19**	**20**
% of cases[2]	**0.9**	**1.6**	**1.5**

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: 1. Includes cases with sex missing.

2. Percent of all cases that were assigned to a given exposure category, for a given sex (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.9. Newly Diagnosed HIV Cases and Percents by Exposure Category and Region, Alberta, 1998* to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
MSM					
Cases	20	252	134	6	412
% of cases[2]	14.1	44.4	17.8	4.8	25.9
MSM/IDU					
Cases	3	11	21	2	37
% of cases[2]	2.1	1.9	2.8	1.6	2.3
IDU					
Cases	36	112	303	43	494
% of cases[2]	25.4	19.7	40.2	34.1	31.1
Heterosexual contact					
Endemic					
Cases	23	86	99	4	212
% of cases[2]	16.2	15.1	13.1	3.2	13.3
Partner at risk					
Cases	23	41	95	31	190
% of cases[2]	16.2	7.2	12.6	24.6	11.9
Blood/Clotting Factor					
Cases	0	0	1	0	1
% of cases[2]	0.0	0.0	0.1	0.0	0.1
Mother-to-Child/Pediatric					
Cases	1	3	0	0	4
% of cases[2]	0.7	0.5	0.0	0.0	0.3
Occupational exposure					
Cases	1	0	1	0	2
% of cases[2]	0.7	0.0	0.1	0.0	0.1
NIR - Heterosexual					
Cases	31	52	76	34	193
% of cases[2]	21.8	9.2	10.1	27.0	12.1
Unknown					
NIR - Other					
Cases	3	5	16	4	28
% of cases[2]	2.1	0.9	2.1	3.2	1.8
Unknown					
Cases	1	6	8	2	17
% of cases[2]	0.7	1.1	1.1	1.6	1.1

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Alberta total contains unknown region cases.
2. Percent of all cases of a given gender that were assigned to a given exposure category, for a given region (column percent)

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction

Table 4.3.10. Newly Diagnosed AIDS Cases and Percents by Exposure Category and Region, Alberta, 1998 to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
MSM					
Cases	**8**	**92**	**25**	**3**	**128**
% of cases[2]	**26.7**	**43.2**	**26.0**	**10.0**	**34.7**
MSM/IDU					
Cases	**2**	**14**	**6**	**1**	**23**
% of cases[2]	**6.7**	**6.6**	**6.3**	**3.3**	**6.2**
IDU					
Cases	**8**	**38**	**28**	**9**	**83**
% of cases[2]	**26.7**	**17.8**	**29.2**	**30.0**	**22.5**
Heterosexual contact					
Endemic					
Cases	**3**	**20**	**5**	**0**	**28**
% of cases[2]	**10.0**	**9.4**	**5.2**	**0.0**	**7.6**
Partner at risk					
Cases	**3**	**16**	**9**	**7**	**35**
% of cases[2]	**10.0**	**7.5**	**9.4**	**23.3**	**9.5**
Blood/Clotting Factor					
Cases	**0**	**3**	**2**	**0**	**5**
% of cases[2]	**0.0**	**1.4**	**2.1**	**0.0**	**1.4**
Mother-to-Child/Pediatric					
Cases	**0**	**1**	**0**	**0**	**1**
% of cases[2]	**0.0**	**0.5**	**0.0**	**0.0**	**0.3**
NIR - Heterosexual					
Cases	**5**	**26**	**16**	**8**	**55**
% of cases[2]	**16.7**	**12.2**	**16.7**	**26.7**	**14.9**
Unknown					
NIR - Other					
Cases	**1**	**1**	**2**	**1**	**5**
% of cases[2]	**3.3**	**0.5**	**2.1**	**3.3**	**1.4**
Unknown					
Cases	**0**	**2**	**3**	**1**	**6**
% of cases[2]	**0.0**	**0.9**	**3.1**	**3.3**	**1.6**

Source: Alberta Health and Wellness. CDRS atabase, August 2007 release.

Notes: 1. Alberta total contains unknown region cases.

2. Percent of all cases of a given gender that were assigned to a given exposure category, for a given region (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.11. Newly Diagnosed HIV Cases and Percents by Ethnicity and Region, Alberta, 1998* to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Aboriginal					
Cases	**46**	**60**	**243**	**89**	**438**
% of cases[2]	**32.4**	**10.6**	**32.2**	**70.6**	**27.5**
Black					
Cases	**28**	**93**	**110**	**2**	**233**
% of cases[2]	**19.7**	**16.4**	**14.6**	**1.6**	**14.7**
Asian					
Cases	**1**	**26**	**25**	**3**	**55**
% of cases[2]	**0.7**	**4.6**	**3.3**	**2.4**	**3.5**
Caucasian					
Cases	**64**	**364**	**342**	**30**	**800**
% of cases[2]	**45.1**	**64.1**	**45.4**	**23.8**	**50.3**
Latin-American					
Cases	**0**	**8**	**13**	**0**	**21**
% of cases[2]	**0.0**	**1.4**	**1.7**	**0.0**	**1.3**
Other					
Cases	**3**	**17**	**21**	**2**	**43**
% of cases[2]	**2.1**	**3.0**	**2.8**	**1.6**	**2.7**
Unknown					
Cases	**0**	**0**	**0**	**0**	**0**
% of cases[2]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Alberta total contains unknown region cases.
2. Percent of all cases of a given ethnicity for a given region (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.12 Newly Diagnosed AIDS Cases and Percents by Ethnicity and Region, Alberta, 1998 to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Aboriginal					
Cases	9	21	21	17	68
% of cases[2]	30.0	9.9	21.9	56.7	18.4
Black					
Cases	3	25	6	0	34
% of cases[2]	10.0	11.7	6.3	0.0	9.2
Asian					
Cases	0	10	6	0	16
% of cases[2]	0.0	4.7	6.3	0.0	4.3
Caucasian					
Cases	18	151	62	13	244
% of cases[2]	60.0	70.9	64.6	43.3	66.1
Latin-American					
Cases	0	3	0	0	3
% of cases[2]	0.0	1.4	0.0	0.0	0.8
Other					
Cases	0	3	1	0	4
% of cases[2]	0.0	1.4	1.0	0.0	1.1
Unknown					
Cases	0	0	0	0	0
% of cases[2]	0.0	0.0	0.0	0.0	0.0

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: 1. Alberta total contains unknown region cases.

2. Percent of all cases of a given ethnicity for a given region (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.13 Newly Diagnosed HIV Cases, Percents, Rates, and Rate Ratios by First Nations Status and Sex, Alberta, 1998* to 2006 Combined

	Female	Male	All[1]
First Nations			
Cases	209	213	422
% of cases[2]	41.5	19.6	26.5
Rate (per 100,000 First Nations)	32.5	32.9	32.7
Age-adjusted rate (per 100,000 First nations)[4]	34.1	38.1	36.1
Standard error of adjusted rate (SE)	2.5	2.7	1.8
Non-First Nations			
Cases	295	873	1,168
% of cases[2]	58.5	80.4	73.5
Rate (per 100,000 non-First Nations)	2.2	6.6	4.4
Age-adjusted rate (per 100,000 non-First nations)[4]	2.3	6.7	4.5
Standard error of adjusted rate (SE)	0.1	0.2	0.1
Rate Ratio[3]			
Crude	14.6	5.0	7.4
Age-adjusted	14.8	5.7	8.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Includes cases with sex missing.
2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent).
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
4. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.14 Newly Diagnosed AIDS Cases, Percents, Rates, and Rate Ratios by First Nations Status and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
First Nations			
Cases	18	29	47
% of cases[2]	28.1	9.5	12.7
Rate (per 100,000 First Nations)	2.8	4.5	3.6
Age-adjusted rate (per 100,000 First nations)[4]	4.8	8.4	6.6
Standard error of adjusted rate (SE)	1.1	1.4	0.9
Non-First Nations			
Cases	46	276	322
% of cases[2]	71.9	90.5	87.3
Rate (per 100,000 non-First Nations)	0.3	2.1	1.2
Age-adjusted rate (per 100,000 non-First nations)[4]	0.3	2.0	1.2
Standard error of adjusted rate (SE)	0.1	0.1	0.1
Rate Ratio[3]			
Crude	8.0	2.1	3.0
Age-adjusted	15.4	4.2	5.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.
2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent).
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
4. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.15. Number and Percent of Pregnant Women Tested for HIV by Year, Alberta, September 1998 to August 2007

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Sep98-Aug07
Women eligible for testing[1]	47,606	42,522	41,026	38,988	39,943	41,635	43,352	46,551	50,528	392,151
Women tested[2]	43,907	39,729	39,872	38,011	38,447	40,246	41,902	45,059	48,994	376,167
% of eligible women tested	92.2	93.4	97.2	97.5	96.3	96.7	96.7	96.8	97.0	95.9
Women declining[3]	1,904	988	563	731	1,714	1,588	1,628	1,673	1,770	12,559
% of eligible women declining	4.0	2.3	1.4	1.9	4.3	3.8	3.8	3.6	3.5	3.2
Women tested positive[4]	15	18	21	18	12	16	29	15	32	176
Rate of positive tests (per 1,000 live births)[5]	0.40	0.48	0.57	0.48	0.31	0.40	0.72	0.36	0.72	0.50

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Provincial Lab for Public Health - Prenatal Screening Database, as of Oct 12/07.
Canadian Blood Services. Alberta Routine Prenatal Care Blood Testing Database, Sep 1998-Aug 2002. October 2002 release.
Alberta Reproductive Health:Pregnancies & Births Table Update 2007, Alberta Health and Wellness.

Notes: 1. Pregnant women receiving prenatal care with a proper Requisition Form and registered with the Alberta Health Care Insurance Plan. Each woman was counted only once in a 12 month period (regardless of how many times she was tested).
2. Pregnant women who received an HIV screening test during the 12 month period. Repeated tests were excluded.
3. The estimated number of pregnant women who declined HIV testing, excluding women who were not registered with the Alberta Health Care Insurance Plan at the time of receiving prenatal care.
4. The number of pregnant women confirmed positive for HIV for the first time by Provincial Lab for Public Health and/or with a HIV case report. Cases reported in previous pregnancies were excluded.
5. The number of pregnant women confirmed positive for HIV per 1,000 live births in Alberta.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 4.3.16 AIDS Deaths by Number of Years Since Diagnosis, and Mean Age at Death, by Year, Alberta, 1986 to 2006

Year of Diagnosis	Reported Deaths[1]	Death within One Year of Diagnosis		Death within Three Years of Diagnosis		Death within Five Years of Diagnosis		Mean Age at Death		
		N[2]	%[3]	N[2]	%[3]	N[2]	%[3]	Mean	SD	Mean_{adj}[4]
1986	23	13	56.5	21	91.3	23	100.0	36	11	24
1987	39	23	59.0	37	94.9	39	100.0	37	11	26
1988	58	27	46.6	53	91.4	58	100.0	39	13	31
1989	74	21	28.4	63	85.1	71	95.9	42	11	35
1990	65	24	36.9	55	84.6	63	96.9	39	10	32
1991	71	31	43.7	63	88.7	70	98.6	41	11	35
1992	88	38	43.2	84	95.5	88	100.0	40	10	34
1993	77	36	46.8	69	89.6	75	97.4	40	10	35
1994	93	43	46.2	85	91.4	87	93.5	39	9	34
1995	46	27	58.7	41	89.1	44	95.7	41	10	36
1996	27	18	66.7	20	74.1	22	81.5	43	9	36
1997	12	6	50.0	8	66.7	12	100.0	37	14	35
1998	9	4	44.4	6	66.7	7	77.8	44	7	38
1999	12	7	58.3	11	91.7	12	100.0	36	6	29
2000	10	9	90.0	10	100.0	10	100.0	39	7	36
2001	7	6	85.7	7	100.0	7	100.0	53	17	42
2002	2	2	100.0	2	100.0	2	100.0	48	3	38
2003	3	3	100.0	3	100.0	3	100.0	57	10	46
2004	8	6	75.0	7	87.5	7	87.5	53	14	42
2005	1	0	-	1	100.0	1	100.0	34	0	28
2006	1	1	100.0	1	100.0	1	100.0	46	0	40
1986-2006	726	345	47.5	647	89.1	702	96.7	40	11	40

Source: Alberta Health and Wellness. CDRS database, August 2007 release.

Notes: 1. Number of deaths among people living with AIDS reported to CDRS.

2. Number of deaths among people living with AIDS in a given time period between the date of diagnosis and the date of death

3. The proportion of deaths among people living with AIDS in a given time period, between the date of diagnosis and the date of death among total deaths of a given year.

4. The average age at death adjusted for the effects of year of diagnosis, sex, exposure category, and ethnicity. The general linear model (GLM) was used.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction

5.
HCV

5.1 Fundamentals

5.2 National and International Data

5.3 Alberta Data

5.1 Fundamentals

Acute HCV infection is asymptomatic in three out of four cases. Up to 30% of acute infections are cleared and do not progress to chronic infection.

Hepatitis C is caused by the hepatitis C virus (HCV), which was first identified in 1989. The incubation period for HCV infection averages 6 to 7 weeks. The most common symptom of acute hepatitis C infection is jaundice; other symptoms can include loss of appetite, stomach pain, and dark urine, although 70-80% of people have no symptoms. About 20-30% of persons with acute HCV infection clear the infection without treatment, and the remaining 70-80% progress to chronic infection. Each year, 1-5% of infected people die from chronic liver disease, disease from liver damage, or liver cancer. [15]

Injection drug use is the primary mode of transmission for HCV in Canada.

The primary method of transmission of HCV is through exposure to infected blood. In recent years in Canada, approximately 70-80% of HCV cases were transmitted by injection drug use. [16] Infants born to infected mothers may also be infected (mother-to-child or vertical transmission). Sexual contact plays a relatively smaller role in the transmission of HCV than HIV, but does occur. Household transmission through blood on razors, toothbrushes, and combs is possible. Transmission of HCV through blood transfusion has been uncommon in Canada since the introduction of universal testing of blood donations for HCV in 1990. [15, 16]

High risk groups for HCV infection include recipients of blood, tissues, or organs prior to 1990, recipients of blood clotting factors prior to 1992, injection drug users, and people who snort drugs. Moderate risk exists for hemodialysis patients, tattoo or body piercing clients, and people who have unprotected sex with an HCV carrier. [15]

HCV treatment is complex and varies according to the particular strain of the virus that is contracted.

There is no vaccine for the prevention of HCV infection. Treatment is costly and complex. The outcome of treatment for HCV varies depending on the strain or genotype of the virus. Treatment combinations containing pegylated interferon and ribavirin result in a response rate of 42-46% with genotype 1, the most common strain of HCV found in North America, and 76-82% with genotypes 2 and 3.

5.2 National and International Data

About three in every one hundred people on earth are infected with HCV.

Every year, three to four million people worldwide are newly infected with HCV. Approximately 180 million people, fully 3% of the population of Earth, are infected. About 130 million are chronic carriers of the virus and are at risk of liver cirrhosis or liver cancer. [18]

The prevalence rate of HCV is highest (as much as 5-10%) in Africa, Latin America, and Central and South-Eastern Asia. The Nile delta of Egypt has prevalence as high as 60% in 30 year olds. The USA and most of Europe are considered "medium endemicity" (>2%), with lowest rates of HCV in Australia, Canada, and northern Europe (<1%).[18]

In Canada, nearly one out of every one hundred people is infected with HCV. Many do not know they are carrying the disease.

In 2002, there were an estimated 250,000 people living with HCV infection in Canada (0.8% of the population). Up to 70% of infected persons may not be aware that they have been infected and could be carrying the disease. [16]

There were 13,403 newly reported cases of HCV in Canada in 2004, for an overall incidence rate of 44.7 newly reported cases per 100,000 people (58.6 for males and 30.3 for females). Rates in Alberta tend to be slightly higher than national rates. [19]

In 2004, the highest rates of newly reported cases occurred in the 40- to 59-year-old age group. Prior to 2002, the highest rates were found among 30- to 39-year-olds. [19]

More than half of illicit drug users in Canada may be infected with HCV.

Injection drug use is the most likely mode of transmission for the majority of recently-reported cases of HCV in Canada. A recent Canadian study of illicit drug users found that 54.6% were HCV positive. [20] Other high to moderate risk factors include receipt of blood products prior to 1990, receipt of blood clotting factors prior to 1992, snorting drugs, hemodialysis, tattooing, body piercing, and unprotected sex with an HCV carrier.[21] Smokers of crack cocaine may also be at increased risk of HCV infection. [22]

The number of hepatitis C-related deaths is growing rapidly in Canada.

The burden of disease associated with hepatitis C in Canada is substantial and growing rapidly. Using a simulation based on the 240,000 people estimated to be living with hepatitis C in Canada in 1998, large increases were expected between 1998 and 2008 in various hepatitis C-attributed conditions, including cirrhosis (92% increase), liver failures (126%), hepatocellular carcinomas (102%), and need for liver transplants (246%). Liver-related deaths associated with hepatitis C were expected to increase by 126% between 1998 and 2008. [21]

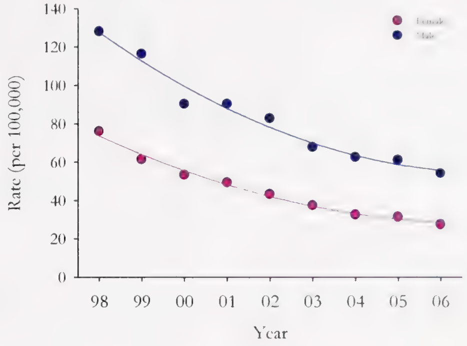
5.3 *Alberta Data*

The rate of newly diagnosed cases of HCV in Alberta is on a downward trend in both males and females.

Approximately two thirds of newly diagnosed HCV cases occur in males.

Time Trends (see Table 5.3.1)

Age-Adjusted Rate of Newly Reported
HCV Cases by Sex, Alberta, 1998 - 2006

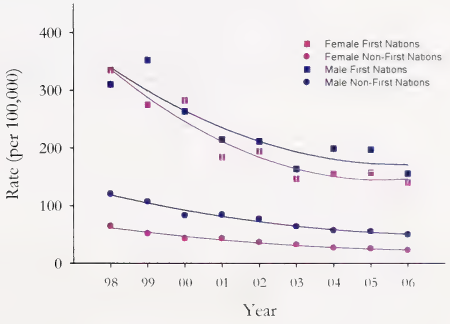


- Between 1998 and 2006, the rate of newly diagnosed cases of HCV declined substantially in Alberta.
- The rate of newly diagnosed cases of HCV was consistently higher in males than in females (approximately double, in recent years).
- In 2006, there were 911 new male cases of HCV (54.0 per 100,000 males) and 464 new female cases (27.5 per 100,000 females).

HCV rates are much higher in First Nations individuals than in non-First Nations persons.

Time Trends by First Nations Status (see Table 5.3.2)

Age-Adjusted Rate of Newly Reported
HCV Cases by Year, Sex, and First Nations Status,
Alberta, 1998 - 2006



- While newly diagnosed cases of HCV declined for First Nations as well as non-First Nations individuals, the First Nations rate was substantially higher than the non-First Nations rate. First Nations made up 13.6% of HCV cases but only 4.7% of the population.
- In 2006, the female First Nations rate (139.8 per 100,000 First Nations females) was 6.2 times the non-First Nations rate (22.6 per 100,000 non-First Nations females). For males, the rate ratio was 3.1, with rates of 155.9 (per 100,000 First Nations males) for and 49.7 (per 100,000 non-First Nations males).

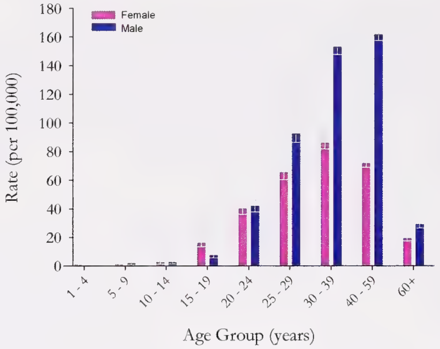
5.3 *Alberta Data*

Age Groups (see Table 5.3.3)

The peak rate of newly diagnosed cases of HCV is at an older age for males (40 to 59 years) than for females (30 to 39 years).

Newly diagnosed HCV rates are higher for males in most age groups; an exception is 15 to 19 year olds.

Rate of Newly Reported HCV Cases by Sex and Age Group, Alberta, 1998 - 2006 Combined



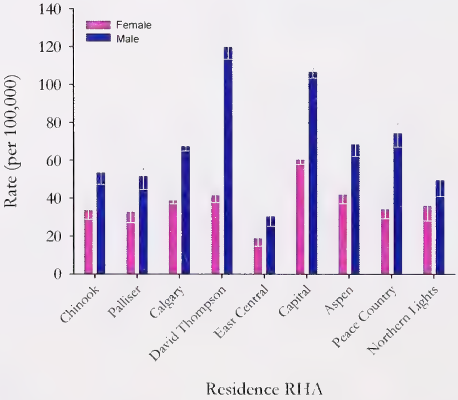
- For males, the rate of newly diagnosed cases of HCV was highest in 40 to 59 year olds (161.2 per 100,000 males; 6,302 cases) and 30 to 39 year olds (rate: 152.6; 3,273 cases) between 1998 and 2006.
- For females, the rate was highest in 30 to 39 year olds (85.7 per 100,000 females; 1,851 cases), and was nearly as high in 25 to 29 year olds and 40 to 59 year olds.
- The rate for 15 to 19 year olds was higher in females (16.0) than in males (7.2).

Geographic Areas (see Tables 5.3.4 and 5.3.5)

David Thompson and Capital Health regions had the highest male rates of newly diagnosed HCV infections between 1998 and 2006. The highest female rate was in Capital Health.

Rates were lowest in East Central region.

Age-Adjusted Rate of Newly Reported HCV Cases by Sex and RHA, Alberta, 1998 - 2006 Combined



5.3 *Alberta Data*

Geographic Areas continued (see Tables 5.3.4 and 5.3.5)

- For 1998 to 2006 combined, the highest rates of newly diagnosed HCV cases for males occurred in the David Thompson region (119.6 per 100,000 males; 1,424 cases) and the Capital Health region (rate: 106.4; 4,670 cases).
- The highest rate for females during this time period was in the Capital Health region (60.4 per 100,000 females; 2,637 cases).
- The East Central region had the lowest rates for both males (30.2) and females (18.8).
- Rates were higher for males than for females in all RHAs.

Limitations and Methodology Notes

A case definition for HCV appears in Appendix 15.5.

HCV has been reportable in Alberta since 1996. Many HCV cases were diagnosed prior to 1996 but not reported to the CDRS; these cases do not appear in this report. Much of the burden of hepatitis C in Alberta may be represented by these earlier diagnosed chronic cases, and by cases diagnosed prior to relocating to Alberta.

Ethnicity data for HCV in the CDRS are incomplete. For this reason, a linkage between HCV data sets and the Alberta Health Care Insurance Plan Registry was performed to obtain data on First Nations status. Persons having First Nations status are registered under the Indian Act or are recognized as Inuit or Innu. Note that this category excludes Métis persons, unlike the Aboriginal ethnicity category used for the HIV/AIDS analyses.

Children under 18 months of age were omitted from HCV analyses.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 5.3.1. Newly Diagnosed HCV Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly diagnosed cases	1,070	887	781	744	671	586	516	516	464	6,235
% female cases[1]	37.3	34.4	36.8	35.1	34.1	34.6	33.4	33.8	33.7	35.0
Rate (per 100,000 females)	74.8	60.6	52.6	49.2	43.4	37.4	32.4	32.0	28.1	45.0
Age-adjusted rate[3]	75.9	61.3	53.2	49.2	43.2	37.3	32.4	31.4	27.5	45.2
Standard error of adjusted rate (SE)	2.32	2.06	1.91	1.81	1.68	1.55	1.44	1.40	1.29	0.57
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	1,798	1,690	1,339	1,371	1,299	1,095	1,029	1,012	911	11,544
% male cases[1]	62.7	65.5	63.2	64.7	65.9	64.6	66.6	66.2	66.3	64.9
Rate (per 100,000 males)	126.3	115.8	90.3	90.8	84.2	69.9	64.8	62.9	55.4	83.5
Age-adjusted rate[3]	128.0	116.3	90.2	90.2	82.7	67.6	62.4	61.0	54.0	82.7
Standard error of adjusted rate (SE)	3.02	2.84	2.47	2.45	2.31	2.06	1.97	1.94	1.81	0.78
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	2,868	2,579	2,120	2,118	1,970	1,695	1,545	1,528	1,375	17,798
Rate (per 100,000 population)	100.5	88.2	71.4	70.1	63.8	54.1	48.6	47.4	41.7	64.3
Age-adjusted rate[3]	102.0	88.9	71.8	69.8	63.0	53.0	47.5	46.2	40.7	64.0
Standard error of adjusted rate (SE)	1.91	1.75	1.56	1.52	1.43	1.30	1.22	1.20	1.11	0.48

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.2. Newly Diagnosed HCV Cases, Percents, Rates, and Rate Ratios by First Nations Status, Sex, and Year, Alberta, 1998 to 2006

Female	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	196	171	174	116	125	96	104	109	95	1,186
% of cases[1]	53.0	47.0	53.4	46.0	49.0	49.5	45.8	47.0	48.5	49.1
Rate (per 100,000 First Nations females)	303.4	256.4	253.7	165.0	173.9	130.9	139.1	143.5	123.2	184.4
Age-adjusted rate[2]	335.2	275.3	282.9	184.2	194.3	146.6	155.2	157.3	139.8	203.4
Standard error of adjusted rate (SE)	25.5	22.4	23.0	18.0	18.6	15.6	15.7	15.9	15.3	6.2
Non-First Nations										
Cases	874	716	607	628	546	490	412	407	369	5,049
% of cases[1]	35.0	32.3	33.8	33.7	31.8	32.6	31.3	31.4	31.3	32.8
Rate (per 100,000 non-First Nations females)	64.0	51.3	42.8	43.5	37.1	32.8	27.2	26.5	23.4	38.2
Age-adjusted rate[2]	64.5	51.6	43.0	43.1	36.5	32.3	26.8	25.6	22.6	38.0
Standard error of adjusted rate (SE)	2.2	1.9	1.8	1.7	1.6	1.5	1.3	1.3	1.2	0.5
Rate Ratio[3]										
Crude	4.7	5.0	5.9	3.8	4.7	4.0	5.1	5.4	5.3	4.8
Age-adjusted	5.2	5.3	6.6	4.3	5.3	4.5	5.8	6.1	6.2	5.4
Male	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	174	193	152	135	130	97	123	123	101	1,228
% of cases[1]	47.0	53.0	46.6	53.6	51.0	50.0	54.2	53.0	51.5	50.8
Rate (per 100,000 First Nations males)	268.6	287.8	219.9	190.3	179.3	131.1	163.1	161.0	130.5	189.6
Age-adjusted rate[2]	310.3	352.4	263.5	215.1	211.5	163.7	199.1	197.3	155.9	226.1
Standard error of adjusted rate (SE)	24.5	27.3	22.3	19.0	19.6	17.8	19.2	19.1	16.5	6.8
Non-First Nations										
Cases	1,624	1,497	1,187	1,236	1,169	998	906	889	810	10,316
% of cases[1]	65.0	67.6	66.2	66.2	68.2	66.5	68.7	68.6	68.7	67.1
Rate (per 100,000 non-First Nations males)	119.5	107.5	84.0	85.9	79.6	66.9	59.9	58.0	51.7	78.3
Age-adjusted rate[2]	120.0	106.9	83.0	84.2	76.9	63.9	56.9	55.3	49.7	76.6
Standard error of adjusted rate (SE)	3.0	2.8	2.4	2.4	2.3	2.0	1.9	1.9	1.8	0.8
Rate Ratio[3]										
Crude	2.2	2.7	2.6	2.2	2.3	2.0	2.7	2.8	2.5	2.4
Age-adjusted	2.6	3.3	3.2	2.6	2.8	2.6	3.5	3.6	3.1	3.0
All[4]	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	370	364	326	252	255	194	227	232	196	2,416
Rate (per 100,000 First Nations population)	286.0	272.2	236.7	178.4	176.6	131.7	151.1	152.3	126.8	187.2
Age-adjusted rate[2]	322.9	313.8	273.3	200.2	202.8	156.0	177.1	177.3	147.8	214.9
Standard error of adjusted rate (SE)	17.6	17.7	16.0	13.1	13.5	11.9	12.4	12.4	11.2	4.6
Non-First Nations										
Cases	2,498	2,215	1,794	1,866	1,715	1,501	1,318	1,296	1,179	15,382
Rate (per 100,000 non-First Nations population)	91.7	79.4	63.4	64.8	58.3	50.3	43.5	42.2	37.5	58.3
Age-adjusted rate[2]	92.3	79.4	63.2	63.7	56.7	48.6	41.9	40.5	36.2	57.4
Standard error of adjusted rate (SE)	1.9	1.7	1.5	1.5	1.4	1.3	1.2	1.1	1.1	0.5
Rate Ratio[3]										
Crude	3.1	3.4	3.7	2.8	3.0	2.6	3.5	3.6	3.4	3.2
Age-adjusted	3.5	4.0	4.3	3.1	3.6	3.2	4.2	4.4	4.1	3.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given sex that were assigned to a given First Nations status, for a given year (column percent).

2. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.

3. Ratio of the rate for First Nations to the rate for Non-First Nations.

4. Includes cases with sex missing.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.3. Newly Diagnosed HCV Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	4	7	22	160	396	649	1,851	2,742	404
% female cases[1]	66.7	31.8	46.8	67.8	48.6	41.4	36.1	30.3	43.9
Rate (per 100,000 females)	0.6	0.8	2.2	16.0	39.9	65.2	85.7	71.6	19.3
Standard error (SE)	0.3	0.3	0.5	1.3	2.0	2.6	2.0	1.4	1.0
Male	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	2	15	25	76	419	918	3,273	6,302	514
% male cases[1]	33.3	68.2	53.2	32.2	51.4	58.5	63.8	69.6	55.9
Rate (per 100,000 males)	0.3	1.5	2.4	7.2	41.6	92.1	152.6	161.2	28.8
Standard error (SE)	0.2	0.4	0.5	0.9	2.0	3.0	2.7	2.1	1.2
All[2]	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	6	22	47	236	815	1,569	5,131	9,052	920
Rate (per 100,000 population)	0.4	1.2	2.3	11.5	40.8	78.8	119.2	117.0	23.7
Standard error (SE)	0.2	0.4	0.5	1.1	2.0	2.8	2.3	1.7	1.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.4. Newly Diagnosed HCV Cases and Rates by Sex and RHA, Alberta, 1998 to 2006 Combined

Female	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	214	136	1,990	496	88	2,637	307	190	98	6,235
% female cases[2]	39.8	37.9	36.2	25.8	37.3	36.0	37.4	30.8	38.7	35.0
Rate (per 100,000 females)	31.0	31.4	40.1	39.0	17.8	60.3	39.6	33.2	33.8	45.0
Age-adjusted rate[3]	33.5	32.7	38.8	41.5	18.8	60.4	41.9	34.2	35.9	45.2
Standard error of adjusted rate (SE)	2.3	2.8	0.9	1.9	2.0	1.2	2.4	2.5	4.0	0.6
Male	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	324	222	3,502	1,424	148	4,670	512	426	154	11,544
% male cases[2]	60.2	61.8	63.7	74.1	62.7	63.8	62.4	69.2	60.9	64.9
Rate (per 100,000 males)	47.9	50.7	70.9	112.1	30.3	108.6	64.1	71.2	49.2	83.5
Age-adjusted rate[3]	53.3	51.4	67.3	119.6	30.2	106.4	68.2	74.2	49.4	82.7
Standard error of adjusted rate (SE)	3.0	3.5	1.2	3.2	2.5	1.6	3.0	3.6	4.2	0.8
All[4]	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	538	359	5,498	1,921	236	7,316	820	616	253	17,798
Rate (per 100,000 population)	39.4	41.2	55.5	75.6	24.1	84.3	52.1	52.6	41.9	64.3
Age-adjusted rate[3]	43.4	42.2	53.1	80.7	24.5	83.4	55.3	54.7	43.3	64.0
Standard error of adjusted rate (SE)	1.9	2.2	0.7	1.9	1.6	1.0	1.9	2.2	2.9	0.5

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases that were of a given sex, for a given RHA (column percent).
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
4. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 5.3.5. Newly Diagnosed HCV Cases and Rates by Year and RHA, Alberta, 2004 to 2006

2004	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	51	38	546	161	28	552	78	58	30	1,545
Rate (per 100,000 females)	33.1	38.1	47.5	55.5	25.4	55.5	44.3	43.6	41.8	48.6
Age-adjusted rate[2]	35.6	38.5	44.9	58.8	27.0	53.5	46.0	45.0	39.3	47.5
Standard error of adjusted rate (SE)	5.1	6.3	1.9	4.7	5.3	2.3	5.3	6.0	7.4	1.2
2005	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	39	21	534	164	24	547	90	71	29	1,528
Rate (per 100,000 males)	25.2	20.8	45.6	55.8	21.7	54.4	51.0	52.5	39.4	47.4
Age-adjusted rate[2]	26.5	20.2	42.8	58.7	21.5	52.9	52.2	54.4	36.9	46.2
Standard error of adjusted rate (SE)	4.4	4.5	1.9	4.7	4.6	2.3	5.6	6.5	7.1	1.2
2006	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	63	31	413	157	22	504	90	66	19	1,375
Rate (per 100,000 population)	40.2	30.3	34.2	52.3	19.8	49.0	50.7	47.5	25.1	41.7
Age-adjusted rate[2]	42.3	28.5	32.1	55.6	19.9	47.6	52.6	49.4	26.3	40.7
Standard error of adjusted rate (SE)	5.5	5.2	1.6	4.5	4.4	2.2	5.7	6.2	6.8	1.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

6.

Acute HBV

6.1 Fundamentals

6.2 National and International Data

6.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

6.1 Fundamentals

Hepatitis B is caused by hepatitis B virus (HBV). The incubation period for acute infection is two to six months. [23]

Not all cases of acute HBV infection proceed to chronic infection. Infections in children are more likely to become chronic when children are infected at very young ages.

Acute hepatitis B occurs in about 1% of perinatal HBV infections, 10% of early childhood infections, and 30% of infections after five years of age. Chronic infection is developed by 90% of children with perinatal infections, compared with 30% of children infected in early childhood and 6% of those infected after five years of age. Chronic HBV infection is associated with a 15-25% risk of premature death from cirrhosis and liver cancer. [24]

Many people infected with HBV show no symptoms. Others exhibit jaundice, tiredness, loss of appetite, joint pain, stomach pain, and malaise. [23]

Injection drug users and those engaging in high-risk sexual activity are at the greatest risk of contracting acute HBV.

In Canada, persons at high risk of being infected with HBV include drug users who share injecting equipment, those who snort drugs, and those who have unprotected sex with multiple partners. Men who have sex with men, people from countries where HBV is endemic, and prison inmates are also at moderate risk. Almost all untreated infants who are born to HBV-positive mothers will be infected with HBV. [23]

HBV is vaccine-preventable. In Alberta, students are immunized against HBV in grade 5.

HBV infection is preventable via a safe and effective vaccine. In Alberta, a grade 5 school based immunization program was put in place in 1995. From 1999 to 2001, a grade 12 "catch-up" program was also in effect, providing immunization to a cohort of individuals not immunized by the grade 5 program.

Pregnant women receiving prenatal care are also screened for HBV infection.

Since 1985, all pregnant women who access prenatal care have received HBV screening in Alberta (for both acute and chronic hepatitis B), and this program has proven very successful. [25,26] Infants who are born to HBV positive mothers in Alberta are given prophylactic treatment including immuno-globulin and vaccine to prevent mother-to-child transmission of HBV. HBV vaccines are also administered to high-risk health care workers, immigrants from endemic countries, and individuals who have close contact with infected persons.

Treatment for HBV is complex and is usually with interferon-alpha and/or lamivudine. Response to treatment varies depending on stage of liver disease and duration of treatment.[27]

6.2 National and International Data

Worldwide, HBV infection is epidemic. Approximately one out of every three people is infected.

The global prevalence of HBV infection is estimated to be more than 2 billion, or one third of the world's population, including 360 million chronically infected persons. Most children in the developing world (sub-Saharan Africa, most of Asia, the Pacific) contract the virus, and 8 to 10% of people there become chronically infected. High rates of infection are found in the Amazon, the southern parts of Eastern and Central Europe, the Middle East, and the Indian sub-continent. Low rates (less than 1%) are found in Western Europe and North America.[28]

About 5% of Canadians have been infected with HBV at some point.

Canadian prevalence estimates of chronic HBV infection indicate that less than 5% of Canadian residents have markers of a past infection with acute HBV, with less than 1% of the population carrying the disease. [29]

In general, Canada has a low overall prevalence rate for HBV, though rates in Aboriginal and Asian populations, as well as in "street-connected" individuals are similar to those in high-prevalence regions in the world.

In 2004, there were 834 newly reported cases of acute HBV in Canada, for a rate of 2.7 reported cases per 100,000 people (3.6 for males, 1.8 for females). The rate decreased steadily from 1989 to 2001 and was stable from 2001 to 2003, with an increase in 2004. [19]

Alberta's rates of acute HBV infections are similar to those of Canada as a whole.

Prior to 1998, the Albertan rate of newly reported cases of acute HBV was lower than the Canadian rate. From 1999 to 2004, Albertan and Canadian rates were similar. [19]

In Canada in 2004, newly reported acute HBV infections occurred most often in persons aged 25 to 39 years, particularly 30 to 39 year olds. Prior to 2001, the 25 to 39 year old age group had the highest incidence rate.[19]

Individuals at high risk in Canada include drug users sharing injecting equipment, drug users who snort drugs, and persons having unprotected sex with multiple partners. Medium risk groups include men who have sex with men, people from countries where the HBV virus is endemic, and prison inmates. [23] Smokers of crack cocaine may also be at increased risk of HBV infection. [22]

Up to one quarter of persons with chronic HBV infection die from cirrhosis or liver cancer.

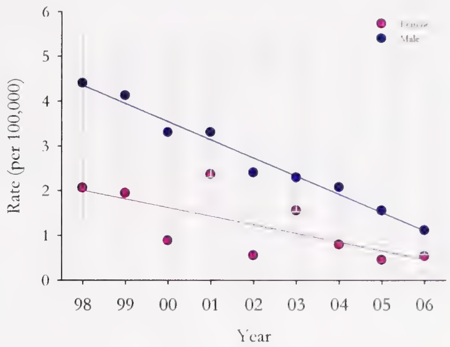
Approximately 15 to 25% of persons with chronic HBV infection die of cirrhosis of the liver or liver cancer. Children who contract HBV, particularly infants, are more likely to develop chronic infection than are adults. [31]

6.3 *Alberta Data*

Rates of newly diagnosed acute HBV declined between 1998 and 2006.

Time Trends (see Table 6.3.1)

Age-Adjusted Rate of Newly Diagnosed
Acute HBV Cases by Sex, Alberta, 1998 - 2006



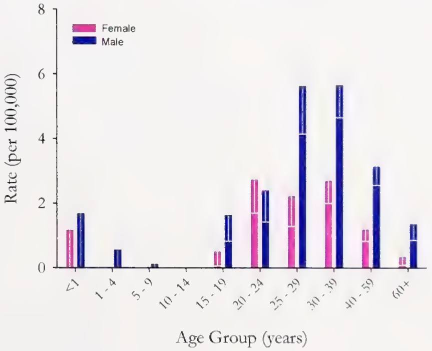
- Both males and females showed a marked decrease in the rate of newly diagnosed acute HBV cases in Alberta between 1998 and 2006.
- The decrease was greater for males, reducing the gender gap.
- In 2006, there were 18 newly diagnosed acute HBV cases in males, for a rate of 1.1 (per 100,000 males). There were 9 newly diagnosed female cases (0.5 per 100,000 females).

Age Groups (see Table 6.3.2)

Male rates of newly diagnosed acute HBV were highest between 25 and 39 years of age.

Female rates were highest between 20 and 39 years of age.

Rate of Newly Diagnosed Acute HBV Cases by Sex
and Age Group, Alberta, 1998 - 2006 Combined



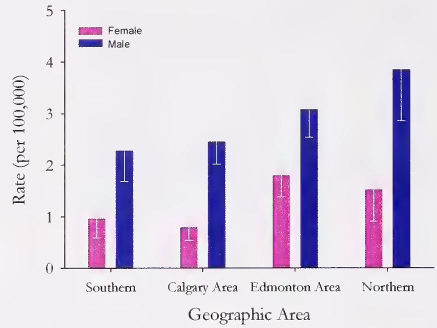
- Acute HBV newly diagnosed case rates peaked for males in the 25 to 29 and 30 to 39 year old age groups (5.6 per 100,000 males).
- For females, the highest rates occurred in the 20 to 24, 25 to 29, and 30 to 39 year old age groups (2.2 to 2.7 per 100,000 females). For age groups 25 to 29 and older, the male rate was substantially higher than the female rate.

6.3 Alberta Data

Regional differences in newly diagnosed acute HBV rates were not pronounced. Overall, rates were somewhat higher in the Edmonton area and Northern Alberta.

Geographic Areas (see Tables 6.3.3 and 6.3.4)

Age-Adjusted Rate of Newly Diagnosed Acute HBV Cases by Sex and Geographic Area, Alberta, 1998 - 2006 Combined

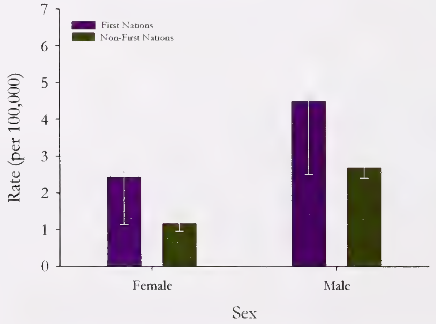


- Northern Alberta had the highest male rate (3.8 per 100,000 males) of newly diagnosed acute HBV cases between 1998 and 2006, though differences between regions were not statistically significant due to small numbers of cases.
- Similarly, the Edmonton area had the highest female rate (1.8 per 100,000 females) among the four regions, though differences between regions were not statistically significant.

Rates of newly diagnosed acute HBV were 2.1 times higher in First Nations females and 1.7 times higher in First Nations males, compared to non-First Nations individuals.

First Nations Status (see Table 6.3.5)

Age-Adjusted Rate of Newly Diagnosed Acute HBV Cases by Sex and First Nations Status, Alberta, 1998 - 2006 Combined



- The First Nations population had higher rates of newly diagnosed acute HBV cases than the non-First Nations population between 1998 and 2006, though differences between groups were not statistically significant due to small numbers of cases.
- The First Nations to non-First Nations rate ratio was 2.1 for females and 1.7 for males during this time period.

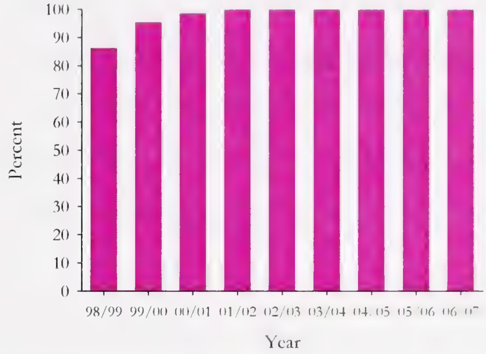
6.3 Alberta Data

Virtually all pregnant women receiving prenatal care in Alberta are tested for HBV infection.

About 5 out of every 1,000 live births involves a mother positive for HBV.

Prenatal Screening for HBV (see Table 6.3.6)

Percent of Women Receiving Prenatal Care Who Were Tested for HBV Infection, Alberta, 1998 - 2006

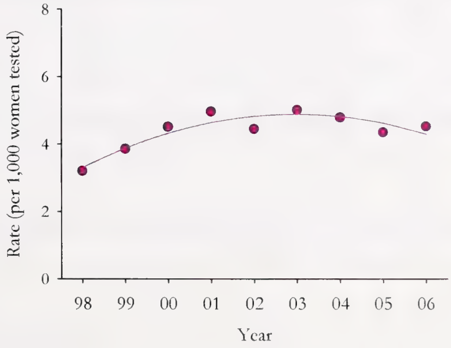


- Nearly every pregnant woman receiving prenatal care in Alberta between fiscal years 1998/99 and 2006/07 was tested for HBV infection. The rate increased between 1998/99 and 2001/02, and has been at virtually 100% since 2005/06.
- Each year, approximately 5 out of every 1,000 live births occurs to a mother who has tested positive for HBV during prenatal screening. In 2006/07, 252 pregnant women tested positive for HBV, for a rate of 5.6 (per 1,000 live births).

Each year in Alberta, fewer than 1% of pregnant women are newly diagnosed carriers of HBV.

Pregnant HBV Carriers (see Table 6.3.7)

Rate of Newly Diagnosed HBV Carrier Cases in Pregnant Women, Alberta, 1998 - 2006



- The rate of newly diagnosed HBV carrier cases among pregnant women increased from 1998 to 2001 and decreased somewhat in 2005 and 2006.
- In 2006, 228 pregnant women were found to be HBV carriers, for a rate of 4.5 (per 1,000 pregnant women).

6.3 Alberta Data

Limitations and Methodology Notes

A case definition for HBV appears in Appendix 15.5.

Acute HBV cases are analyzed by onset date (date of onset of symptoms). Prenatal screening and carrier cases are analyzed by diagnosis date.

Acute HBV has been reportable in Alberta since 1977. Cases diagnosed prior to 1977 or reported to the CDRS between 1977 and 1997 represent a burden of hepatitis B in Alberta that is not accounted for by this report.

Ethnicity data for HBV in the CDRS are incomplete. For this reason, a linkage between HBV data sets and the Alberta Health Care Insurance Plan Registry was performed to obtain data on First Nations status. Persons having First Nations status are registered under the Indian Act or are recognized as Inuit or Innu. Note that this category excludes Métis persons, unlike the Aboriginal ethnicity category used for the HIV/AIDS analyses.

Prenatal screening rates of positive tests are based on live births, whereas pregnant HBV carrier rates are based on pregnant women. Because there are substantially more pregnant women than live births (due to spontaneous abortions, induced abortions, and stillbirths), the rates for pregnant HBV carriers are lower than rates for prenatal HBV screening.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 6.3.1. Newly Diagnosed Acute HBV Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly diagnosed cases	29	28	13	35	8	24	13	7	9	166
% female cases[1]	31.9	32.2	21.3	38.0	17.8	40.7	28.3	22.6	33.3	30.8
Rate (per 100,000 females)	2.0	1.9	0.9	2.3	0.5	1.5	0.8	0.4	0.5	1.2
Age-adjusted rate[3]	2.1	1.9	0.9	2.4	0.6	1.6	0.8	0.5	0.5	1.2
Standard error of adjusted rate (SE)	0.38	0.37	0.25	0.40	0.20	0.32	0.23	0.18	0.18	0.10
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	62	59	48	57	37	35	33	24	18	373
% male cases[1]	68.1	67.8	78.7	62.0	82.2	59.3	71.7	77.4	66.7	69.2
Rate (per 100,000 males)	4.4	4.0	3.2	3.8	2.4	2.2	2.1	1.5	1.1	2.7
Age-adjusted rate[3]	4.4	4.1	3.3	3.8	2.4	2.3	2.1	1.6	1.1	2.8
Standard error of adjusted rate (SE)	0.56	0.55	0.48	0.51	0.40	0.39	0.37	0.32	0.27	0.14
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	91	87	61	92	45	59	46	31	27	539
Rate (per 100,000 population)	3.2	3.0	2.1	3.0	1.5	1.9	1.4	1.0	0.8	1.9
Age-adjusted rate[3]	3.2	3.0	2.1	3.1	1.5	1.9	1.4	1.0	0.8	2.0
Standard error of adjusted rate (SE)	0.34	0.33	0.27	0.32	0.22	0.25	0.21	0.18	0.16	0.09

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.2. Newly Diagnosed Acute HBV Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Newly diagnosed cases	2	0	0	0	5	27	22	58	45	7
% female cases[1]	40.0	0.0	0.0	-	22.7	52.9	28.2	32.4	26.9	22.6
Rate (per 100,000 females)	1.2	-	-	-	0.5	2.7	2.2	2.7	1.2	0.3
Standard error (SE)	0.8	-	-	-	0.2	0.5	0.5	0.4	0.2	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	3	4	1	0	17	24	56	121	122	24
% male cases[1]	60.0	100.0	100.0	-	77.3	47.1	71.8	67.6	73.1	77.4
Rate (per 100,000 males)	1.7	0.5	0.1	-	1.6	2.4	5.6	5.6	3.1	1.3
Standard error (SE)	1.0	0.3	0.1	-	0.4	0.5	0.8	0.5	0.3	0.3
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	5	4	1	0	22	51	78	179	167	31
Rate (per 100,000 population)	1.4	0.3	0.1	-	1.1	2.6	3.9	4.2	2.2	0.8
Standard error (SE)	0.9	0.2	0.1	-	0.3	0.5	0.6	0.4	0.2	0.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given sex, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.3. Acute HBV Cases and Rates by Sex and Region, Alberta, 1998 to 2006 Combined

Female	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	26	40	76	24	166
% female cases[2]	30.6	24.4	37.1	28.2	30.8
Rate (per 100,000 females)	0.9	0.8	1.7	1.5	1.2
Age-adjusted rate[3]	1.0	0.8	1.8	1.5	1.2
Standard error of adjusted rate (SE)	0.2	0.1	0.2	0.3	0.1

Male	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	59	124	129	61	373
% male cases[2]	69.4	75.6	62.9	71.8	69.2
Rate (per 100,000 males)	2.1	2.5	3.0	3.6	2.7
Age-adjusted rate[3]	2.3	2.4	3.1	3.8	2.8
Standard error of adjusted rate (SE)	0.3	0.2	0.3	0.5	0.1

All[4]	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	85	164	205	85	539
Rate (per 100,000 population)	1.5	1.7	2.4	2.5	1.9
Age-adjusted rate[3]	1.6	1.6	2.4	2.7	2.0
Standard error of adjusted rate (SE)	0.2	0.1	0.2	0.3	0.1

Source : Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases that were of a given sex, for a given region (column percent).
3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.
4. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.4. Acute HBV Cases and Rates by Year and Region, Alberta, 2004 to 2006

2004	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	5	8	28	5	46
Rate (per 100,000 females)	0.8	0.7	2.8	1.3	1.4
Age-adjusted rate[2]	0.8	0.6	2.8	1.4	1.4
Standard error of adjusted rate (SE)	0.4	0.2	0.5	0.7	0.2
2005	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	4	7	14	6	31
Rate (per 100,000 males)	0.6	0.6	1.4	1.6	1.0
Age-adjusted rate[2]	0.7	0.6	1.4	1.5	1.0
Standard error of adjusted rate (SE)	0.4	0.3	0.4	0.7	0.2
2006	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	4	15	4	4	27
Rate (per 100,000 population)	0.6	1.2	0.4	1.0	0.8
Age-adjusted rate[2]	0.7	1.2	0.4	1.0	0.8
Standard error of adjusted rate (SE)	0.4	0.3	0.2	0.6	0.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.

2. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.5. Newly Diagnosed Acute HBV Cases, Percents, Rates, and Rate Ratios by First Nations Status and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
First Nations			
Cases	**16**	**25**	**41**
% of cases[2]	**9.6**	**6.7**	**7.6**
Rate (per 100,000 First Nations)	**2.5**	**3.9**	**3.2**
Age-adjusted rate (per 100,000 First nations)[3]	**2.4**	**4.5**	**3.5**
Standard error of adjusted rate (SE)	**0.7**	**1.0**	**0.6**
Non-First Nations			
Cases	**150**	**348**	**498**
% of cases[2]	**90.4**	**93.3**	**92.4**
Rate (per 100,000 non-First Nations)	**1.1**	**2.6**	**1.9**
Age-adjusted rate (per 100,000 non-First nations)[3]	**1.2**	**2.7**	**1.9**
Standard error of adjusted rate (SE)	**0.1**	**0.1**	**0.1**
Rate Ratio[4]			
Crude	**2.2**	**1.5**	**1.7**
Age-adjusted	**2.1**	**1.7**	**1.8**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.

2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent). Excludes cases with unknown First Nations status.

3. The number of cases adjusted by the age distribution of the 1996 Canadian census population per 100,000 population at risk.

4. Ratio of the rate for First Nations to the rate for Non-First Nations.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.6. Number and Percent of Pregnant Women Tested for HBV by Year, Alberta, September 1998 to August 2007

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Sep98-Aug07
Women eligible for testing[1]	47,606	42,522	41,026	38,988	39,943	41,635	43,352	46,551	50,528	392,151
Women tested[2]	41,037	40,563	40,408	38,960	39,886	41,594	43,324	46,537	50,508	382,817
% of eligible women tested	86.2	95.4	98.5	99.9	99.9	99.9	99.9	100.0	100.0	97.6
Women tested positive[3]	**196**	**195**	**198**	**208**	**180**	**192**	**202**	**217**	**252**	**1,840**
Rate of positive tests (per 1,000 live births)[4]	5.2	5.2	5.4	5.6	4.7	4.8	5.0	5.2	5.6	5.2

Sources: Provincial Lab for Public Health - Prenatal Screening Database, as of Oct 12/07.
Alberta Reproductive Health:Pregnancies & Births Table Update 2007, Alberta Health and Wellness.
Canadian Blood Services. Alberta Routine Prenatal Care Blood Testing Database, Sep 1998-Aug 2002. October 2002 release.

Notes:
1. Pregnant women receiving prenatal care with a proper Requisition Form and registered with the Alberta Health Care Insurance Plan. Each woman was counted only once (regardless of how many times she was tested) in a 12 month period (from September to August).
2. Pregnant women who received an HBV screening test during the 12 month period. Repeated tests were excluded.
3. The number of pregnant women confirmed positive for HBV by Provincial Lab for Public Health and/or with an HBV case report. Cases reported in previous pregnancies were included.
4. The number of pregnant women confirmed positive for HBV per 1,000 live births in Alberta.

Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 6.3.7. Newly Diagnosed HBV Carrier Cases and Rates among Pregnant Women by Year, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
HBV carrier cases in pregnant women[1]	131	156	182	193	177	208	207	202	228	1,684
Pregnant women tested for HBV[2]	41,037	40,563	40,408	38,960	39,886	41,594	43,324	46,537	50,508	382,817
Rate per 1,000 pregnant women tested[3]	3.2	3.8	4.5	5.0	4.4	5.0	4.8	4.3	4.5	4.4
Standard error (SE)	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.1**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Provincial Lab for Public Health - Prenatal Screening Database, as of Oct 12/07.
Canadian Blood Services. Alberta Routine Prenatal Care Blood Testing Database, Sep 1998-Aug 2002. October 2002 release.

Notes:
1. The number of pregnant women reported as HBV carriers, with a lab confirmation of HBsAg positive, in the CDRS database.
2. Pregnant women who received an HBV screening test during the 12 month period. Repeated tests were excluded.
3. The number of HBV carriers among pregnant women per 1,000 pregnant women tested for HBV in Alberta.

Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

7.

Blood-borne Pathogen Co-Infections

7.1 Fundamentals

7.2 National and International Data

7.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
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Alberta

7.1 Fundamentals

Blood borne pathogen co infections occur most often in injection drug users, men who have sex with men, and people involved in high-risk sexual activity.

The course of a disease is often altered when another disease is present. There may be altered effects of treatments. Through common modes of transmission, co-infections of HIV, HCV and HBV are likely among injection drug users, men who have sex with men, and people who engage in unprotected sexual activities, especially with multiple partners. [32, 33, 34, 35]

The use of highly active anti-retroviral therapies (HAART) has dramatically improved survival in persons with HIV infection. Morbidity and mortality from opportunistic infections have declined notably. The resulting longer patient survival rates have resulted in increased opportunity for morbidity from hepatitis B and C infections to play a role. [32]

When HIV and HCV are present in the same individual, the course of both diseases is affected.

HIV/HCV co-infected persons are more likely than persons not infected with HIV to progress to chronic HCV infection, and they also progress more quickly from chronic HCV to liver disease. HAART is known to cause liver toxicity, which is much more likely to occur in HIV/HCV co-infected patients than in patients infected with HIV alone. Drugs used to treat HCV may interact with anti-retroviral drugs as well. In short, HIV/HCV co-infection is a major complication compared to infection with just one disease. [32, 34, 35]

The presence of HIV makes it less likely that an acute HBV infection will be cleared.

Although adults who are newly infected with HBV can often clear the acute infection, this is much less likely in HIV-infected individuals. Liver-related mortality rates are much higher in HBV/HIV co-infected people than in people infected with HBV only. As with HCV, HAART can cause liver toxicity in HIV/HBV infected persons. [32]

Infection with both acute HBV and HCV increases the likelihood of poor outcomes associated with both diseases.

Acute HBV and HCV co-infection increases the risk for becoming a chronic carrier of HBV, developing liver fibrosis, and developing cancer. [37]

7.2 National and International Data

In HIV patients, HCV co-infection is more common than HBV co-infection.

The global prevalence of blood-borne pathogen co-infections is variable. In one study, estimates for HCV co-infection in HIV-positive persons ranged from under 2% (South Africa) to almost 50% (Italy, Spain), with an overall global prevalence estimate of 15.6%. HBV/HIV co-infection is less common, and global prevalence estimates are generally between 6 and 10%. [32]

A 1999 study estimated that more than 11,000 people in Canada were HCV/HIV co-infected. As many as 85% of HCV/HIV co-infected persons were injection drug users.[36]

In Canada, injection drug users and hemophiliacs are the two groups most likely to be co-infected with HIV and HCV, whereas men who have sex with men are the most likely to be co-infected with HBV and HIV.

Shared risk factors increase the co-infection rate, so that a large proportion of injection drug users are HIV/HCV co-infected. Most hemophiliacs who are HIV infected are also HCV infected. [32, 34, 35]

HBV and HIV share the risk factor of sexual transmission, and HBV/HIV co-infections are most common in men who have sex with men. [32]

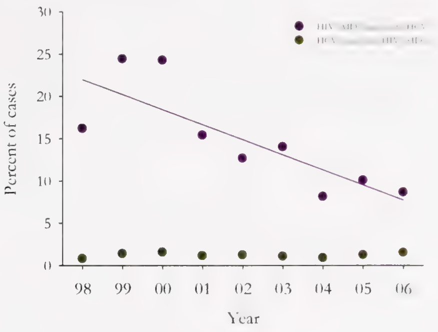
7.3 *Alberta Data*

Time Trends (see Table 7.3.1)

The percentage of co-infections with HCV among newly diagnosed HIV/AIDS cases declined from 1998 to 2006.

There was no time trend in the percentage of newly diagnosed HCV cases co-infected with HIV/AIDS.

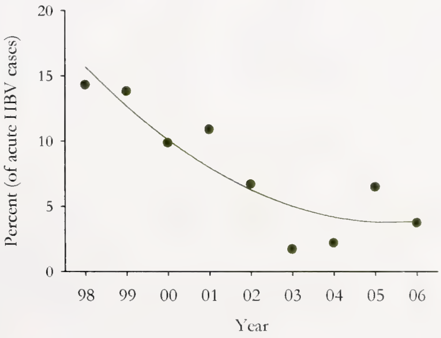
Percent of Newly Reported HIV/AIDS or HCV Cases Concurrently Co-Infected with HCV or HIV/AIDS by Co-Infection and Year, Alberta, 1998* - 2006



- The percentage of newly diagnosed HIV/AIDS cases concurrently co-infected with HCV decreased from 16.2% of newly diagnosed HIV/AIDS cases in 1998 to 8.7% in 2006. Cumulative co-infections also decreased during this time period, from 36.2% to 19.5%.
- The percentage of newly diagnosed HCV infections concurrently co-infected with HIV/AIDS varied between 0.8 and 1.6% of newly diagnosed HCV infections between 1998 and 2006. Cumulative co-infections ranged from 1.5% to 3.5% during this time period.

The percentage of newly diagnosed acute HBV cases co-infected with HCV went down between 1998 and 2006.

Percent of Newly Diagnosed Acute HBV Cases Concurrently Co-Infected with HCV by Year, Alberta, 1998 - 2006



- The percentage of acute HBV cases concurrently co-infected with HCV declined overall between 1998 and 2006, with 3.7% of acute HBV cases concurrently co-infected in 2006. The cumulative co-infection percentage declined as well, and was 11.1% in 2006.

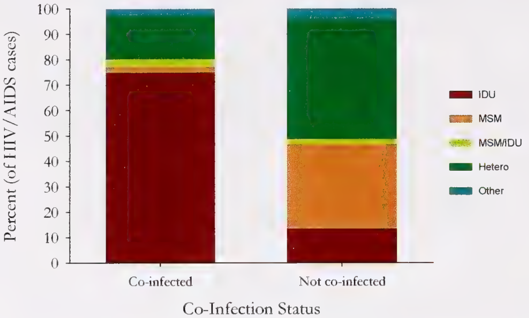
7.3 Alberta Data

Three in four newly diagnosed HIV/AIDS cases co-infected with HCV were exposed to HIV through injection drug use.

Co-infections are more common among Aboriginal or First Nations people than among non-Aboriginal or non-First Nations individuals.

Exposure Categories (see Table 7.3.2)

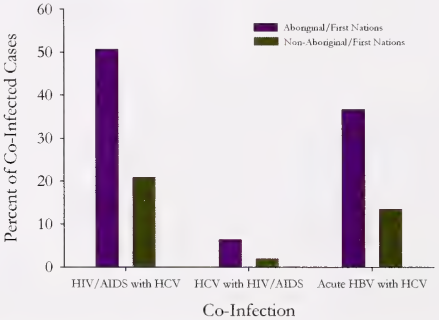
Percent of Newly Reported HIV/AIDS Cases by Cumulative HCV Co-Infection Status and HIV/AIDS Exposure Category, Alberta, 1998* - 2006 Combined



- Newly diagnosed HIV/AIDS cases cumulatively co-infected with HCV are dominated by those who were exposed to HIV via injection drug use (74.9% of co-infected cases), reflecting a common source of infection for these two pathogens.

Aboriginal/First Nations Status (see Table 7.3.3)

Percent of Cumulatively Co-Infected Cases within Aboriginal/First Nations and Non-Aboriginal/First Nations Populations, Alberta, 1998* - 2006



- The Aboriginal/First Nations populations have a higher rate of cumulative co-infections: The percentage of Aboriginal/First Nations individuals who are co-infected was more than twice that of non-Aboriginal/non-First Nations persons, for each of the three co-infections studied.

7.3 Alberta Data

Limitations and Methodology Notes

* HIV became reportable as of May 1998, so 1998 data may be incomplete.

Case definitions appear in Appendix 15.5.

Exposure categories are defined in the Glossary.

Concurrent co-infections are newly diagnosed cases diagnosed within a one month window of another pathogen (e.g., a newly diagnosed HIV case with a diagnosis of HCV within one month before or after the diagnosis of HIV infection).

Cumulative co-infections are newly diagnosed cases diagnosed with another pathogen at any point between 1998 and 2006 (e.g., a newly diagnosed HIV case with a diagnosis of HCV at any time before or after HIV diagnosis, as long as it is between 1998 and 2006).

HIV cases co-infected with acute HBV, HCV cases co-infected with HCV, and acute HBV cases co-infected with HIV/AIDS are not reported due to insufficient numbers of cases for analysis.

HIV/AIDS data are reported for Aboriginal populations while HCV and acute HBV data are reported for First Nations populations because Aboriginal ancestry data are collected during the HIV/AIDS process while First Nations data are available for HCV and HBV only through linkage to the Alberta Health Care Insurance Registry.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 7.3.1. Blood-borne Pathogen Co-infection Cases and Percents by Pathogens, Co-Infection Type, and Year, Alberta, 1998 to 2006

Newly diagnosed HIV/AIDS with HCV	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly reported HIV/AIDS cases	105	168	165	156	166	143	160	179	231	1,473
Cases co-infected with HCV, cumulative[1]	38	56	71	50	54	40	36	40	45	430
% of HIV/AIDS cases co-infected, cumulative[2]	36.2	33.3	43.0	32.1	32.5	28.0	22.5	22.3	19.5	29.2
Cases co-infected with HCV, concurrent[3]	17	41	40	24	21	20	13	18	20	214
% of HIV/AIDS cases co-infected, concurrent[4]	16.2	24.4	24.2	15.4	12.7	14.0	8.1	10.1	8.7	14.5
Newly diagnosed HCV with HIV/AIDS	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly reported HCV cases	2,868	2,579	2,120	2,118	1,970	1,695	1,545	1,528	1,375	17,798
Co-infections with HIV/AIDS, cumulative[1]	84	91	66	41	42	29	23	32	22	430
% of HCV cases co-infected, cumulative[2]	2.9	3.5	3.1	1.9	2.1	1.7	1.5	2.1	1.6	2.4
Co-infections with HIV/AIDS, concurrent[3]	23	36	33	24	24	18	14	19	21	212
% of HCV cases co-infected, concurrent[4]	0.8	1.4	1.6	1.1	1.2	1.1	0.9	1.2	1.5	1.2
Acute HBV with HCV	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed HBV cases	91	87	61	92	45	59	46	31	27	539
Co-infections with HCV, cumulative[1]	19	16	11	15	4	3	1	3	3	75
% of acute HBV cases co-infected, cumulative[2]	20.9	18.4	18.0	16.3	8.9	5.1	2.2	9.7	11.1	13.9
Co-infections with HCV, concurrent[3]	13	12	6	10	3	1	1	2	1	49
% of acute HBV cases co-infected, concurrent[4]	14.3	13.8	9.8	10.9	6.7	1.7	2.2	6.5	3.7	9.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes:
1. The number of newly reported blood-borne pathogen cases co-infected with a given blood-borne pathogen of interest at any time between 1998 and 2006.
2. The percentage of newly reported blood-borne pathogen cases co-infected with a given blood-borne pathogen of interest at any time between 1998 and 2006.
3. The number of newly reported blood-borne pathogen cases concurrently co-infected (within a one month window) with a given blood-borne pathogen of interest.
4. The percentage of newly reported blood-borne pathogen cases concurrently co-infected (within a one month window) with a given blood-borne pathogen of interest.

HIV became reportable as of May 1998, so 1998 data may be incomplete.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 7.3.2. HIV/AIDS with HCV Co-Infection Cases, Percents, and Ratios by Exposure Category, Alberta, 1998 to 2006 Combined

	Co-infected[1]	Not Co-infected	Ratio[2]
MSM			
Cases	9	345	
% of MSM cases[3]	2.5	97.5	
% of co-infected/not co-infected cases[4]	2.1	33.1	0.1
IDU			
Cases	322	141	
% of IDU cases[3]	69.5	30.5	
% of co-infected/not co-infected cases[4]	74.9	13.5	5.5
MSM and IDU			
Cases	13	21	
% of IDU cases[3]	38.2	61.8	
% of co-infected/not co-infected cases[4]	3.0	2.0	1.5
Heterosexual contact			
Cases	75	493	
% of heterosexual contact cases[3]	13.2	86.8	
% of co-infected/not co-infected cases[4]	17.4	47.3	0.4
Other			
Cases	9	27	
% of other exposure category cases[3]	25.0	75.0	
% of co-infected/not co-infected cases[4]	2.1	2.6	0.8
Unknown			
Cases	2	16	
% of unknown exposure category cases[3]	11.1	88.9	
% of co-infected/not co-infected cases[4]	0.5	1.5	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Cumulative co-infections, in which the two diseases of interest were both newly diagnosed in the same patient at any time between 1998 and 2006.

2. Ratio of percent of a given exposure among co-infected cases to the percent among not co-infected cases.

3. Percent of co-infected or not co-infected cases within a given exposure category (row percent).

4. Percent of cases belonging to a given exposure category within co-infected or not co-infected cases (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 7.3.3. Blood-borne Pathogen Co-Infection Cases, Percents, and Odds Ratios by Pathogen Type, Co-Infection Status, and Aboriginal/First Nations Status, 1998 to 2006 Combined

	Co-infected[1]		Not Co-Infected		Odds Ratio (95% CI)[2]
	Aboriginal/First Nations	Non-Aboriginal/ First Nations	Aboriginal/First Nations	Non-Aboriginal/ First Nations	
Newly diagnosed HIV/AIDS with HCV					
Cases	209	221	204	839	
% of co-infection by ethnic group[3]	50.6	20.8	49.4	79.2	3.9
% of ethnicity by co-infection status group[4]	48.6	51.4	19.6	80.4	(3.05-4.96)
Newly diagnosed HCV with HIV/AIDS					
Cases	154	276	2,261	14,583	
% of co-infection by ethnic group[3]	6.4	1.9	93.6	98.1	3.6
% of ethnicity by co-infection status group[4]	35.8	64.2	13.4	86.6	(2.94-4.40)
Acute HBV with HCV					
Cases	15	60	26	386	
% of co-infection by ethnic group[3]	36.6	13.5	63.4	86.5	3.7
% of ethnicity by co-infection status group[4]	20.0	80.0	6.3	93.7	(1.86-7.41)

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes:
1. Cumulative co-infections, in which the two diseases of interest were both diagnosed in the same patient at any time between 1998 and 2006.
2. Odds ratio for proportion of co-infection in Aboriginal/First Nations cases vs. non-Aboroginal/First Nations cases, with 95% confidence interval.
3. Percent of co-infected or non co-infected cases within a given ethnic group (e.g. percent of co-infected First Nations group + percent of not co-infected First Nations group = 100%).
4. Percent of Aboriginal/First Nations or non-Aboriginal/First Nations cases within a given co-infection status group (e.g., percent of co-infected First Nations group + percent of co-infected non-First Nations group = 100%).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

8.

Chlamydia

8.1 Fundamentals

8.2 National and International Data

8.3 Alberta Data

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8.1 Fundamentals

Chlamydia infection is often asymptomatic, particularly in women.

Chlamydia is a bacterial infection, transmitted through oral, vaginal, or anal sex, or during childbirth. Initial infection is asymptomatic in over 50% of males and 70% of females, resulting in under-diagnosis of this condition. [38]

Symptomatic females may experience vaginal discharge, painful urination, lower abdominal pain, abnormal vaginal bleeding, painful sexual intercourse, conjunctivitis, or inflammation of the lining of the rectum. Males may have urethral discharge, urethral itch, painful urination, testicular pain, conjunctivitis, or inflammation of the lining of the rectum. Newborns infected during birth may develop conjunctivitis, while infants may develop pneumonia. [39]

The incubation period is usually two to three weeks, but can be as long as six weeks. Chlamydia is treatable with antibiotics. There is no vaccine for chlamydia. [39]

Complications for untreated women can be severe, such as PID and infertility. Untreated males may also end up with serious consequences, such as infection of the testes or infertility.

High-risk sexual activity is a strong predictor of chlamydia infection.

Females are at high risk of severe complications, including PID, ectopic pregnancy, infertility, chronic pelvic pain, and reactive arthritis. For males, major sequelae include epididymo-orchitis, (infection of the epididymis and testes), infertility, and reactive arthritis. [39]

Risk factors include new sexual partners, multiple sexual partners, and a history of sexually-transmitted infections. Vulnerable populations include injection drug users, incarcerated persons, sex trade workers, and street youth. [39] The presence of a chlamydia infection appears to increase the likelihood of transmission and acquisition of HIV. [40]

8.2 National and International Data

Chlamydia is the most common bacterial STI in the world. There are close to 100 million new infections each year.

Chlamydia is a huge public health problem worldwide. It is the most common bacterial pathogen causing sexually transmitted infection. In 1999 alone, the World Health Organization estimated that there were 92 million *new* adult cases of chlamydia infection across the planet, including 3.9 million new infections in North American adults. [41]

The rate of newly reported chlamydia infections is rising rapidly in Canada.

In 1991, the national rate for chlamydia was 164.0 newly reported cases (per 100,000 population); this rate declined to 113.9 in 1997. The rate of newly reported cases of chlamydia infections in Canada increased 78% from 1997 to 2006. In 2006, there were 65,949 new cases of chlamydia reported in Canada across all age groups, for a rate of 202.2 (per 100,000 population). [42, 43]

Rates for females are higher than for males in Canada.

The rate for females (264.7 per 100,000 females) was nearly double that for males (137.9 per 100,000 males) in 2006. The rate of increase was sharper for males than for females between 1997 and 2006, however. [42]

Alberta has higher chlamydia rates than the national average.

Rates of newly reported cases of chlamydia in Alberta are higher than the national average. The chlamydia rate in Alberta in 2006 was 309.6 (per 100,000 population), compared with 202.2 nationally. [44]

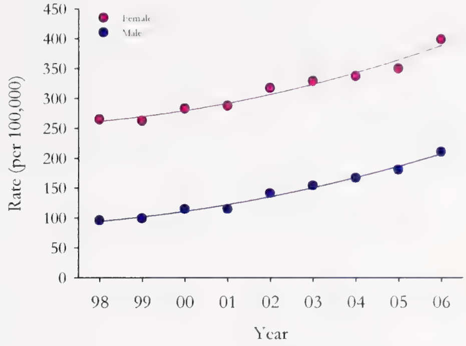
8.3 Alberta Data

Rates of newly diagnosed chlamydia cases increased steadily from 1998 to 2006.

Chlamydia is more common in females than in males.

Time Trends (see Table 8.3.1)

Age-Adjusted Rate of Newly Reported
Chlamydia Cases by Sex, Alberta, 1998 - 2006

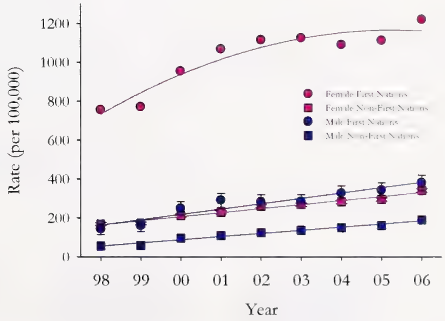


- The rate of newly diagnosed chlamydia infections rose steadily in Alberta between 1998 and 2006, for both males and females. The female rate was typically double that of the male rate.
- In 2006, there were 3,500 new male cases of chlamydia, for a rate of 209.9 (per 100,000 males). There were 6,785 new female cases (397.9 per 100,000 females).

First Nations rates of chlamydia are higher than non-First Nations rates, particularly for women.

Time Trends by First Nations Status (see Table 8.3.2)

Age-Adjusted Rate of Newly Reported
Chlamydia Cases by Sex and First Nations Status,
Alberta, 1998 - 2006



- Increasing time trends are evident for First Nations and non-First Nations populations, both males and females, in the rate of newly diagnosed chlamydia cases for 1998 to 2006.
- Rate ratios indicate that the rates for First Nations females were approximately four times those of non-First Nations females. The rates for First Nations males were more than twice that of non-First Nations males. First Nations cases made up 17.7% of newly diagnosed chlamydia cases, although the First Nations population was only 4.7% of the total Alberta population.

8.3 Alberta Data

Time Trends by First Nations Status **continued**

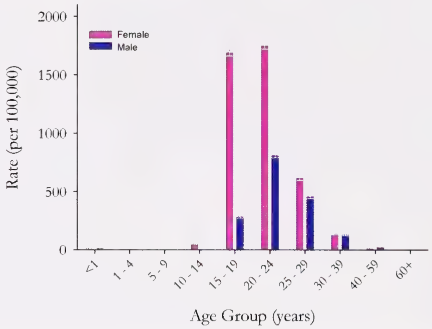
(see Table 8.3.2)

- The rate for First Nations females was substantially higher than for the other groups. In 2006, the rate was 1219.6 (per 100,000 First Nations females) for First Nations women: more than 1.2% of First Nations women in Alberta had new chlamydia infections that year.

Age Effects (see Table 8.3.3)

Chlamydia infections are most common in 15 to 24 year old women.

Age-Adjusted Rate of Newly Reported
Chlamydia Cases by Sex and Age Group,
Alberta, 1998 - 2006 Combined



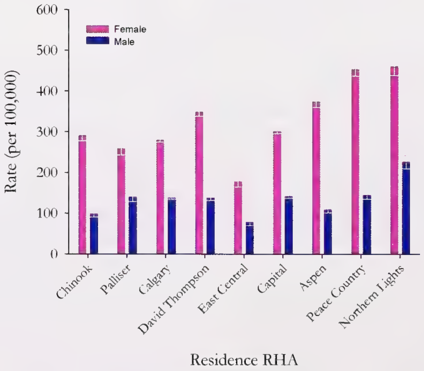
- For males, the rate of newly diagnosed chlamydia infections was highest in the 20 to 24 year age group (805.2 per 100,000 males) for 1998 to 2006 combined. The rate for females was highest for 20 to 24 year olds (1745.9 per 100,000 females) and for 15 to 19 year olds (1686.5).
- For age groups over 40 years, the rate was higher for males than for females.

Geographic Areas (see Tables 8.3.4 and 8.3.5)

Newly diagnosed chlamydia infections in females are most common in Northern Lights and Peace Country RHAs. For males, the highest rates are in Northern Lights region.

Lowest rates occur in East Central region.

Age-Adjusted Rate of Newly Reported
Chlamydia Cases by Sex and RHA,
Alberta, 1998 - 2006 Combined



8.3 Alberta Data

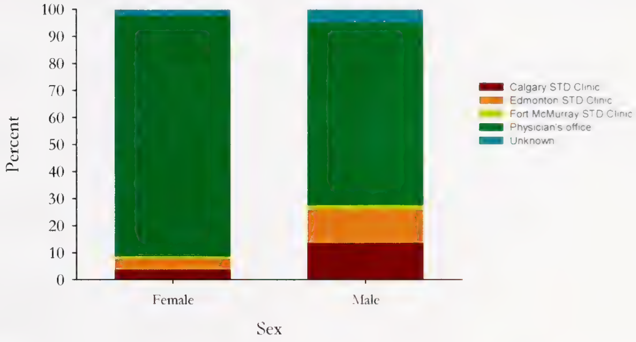
Geographic Areas *continued* (see Tables 8.3.4 and 8.3.5)

- In all RHAs, the rate of newly diagnosed cases of chlamydia was higher for females than for males for 1998 to 2006 combined.
- Variability among RHAs was quite large. For males, the highest rate was in Northern Lights region (226.4 per 100,000 males), and the lowest rate was in East Central region (78.4).
- For females, the highest rates were in Northern Lights and Peace Country Regions (461.6 and 454.1, respectively), while the lowest rate was in East Central region (177.8).

Treatment Agencies (see Tables 8.3.6 and 8.3.7)

Female cases of chlamydia are more likely than male cases to be diagnosed in physicians' offices.

Percent of Newly Reported Chlamydia Cases by Sex and Treatment Agency, Alberta, 1998 - 2006 Combined



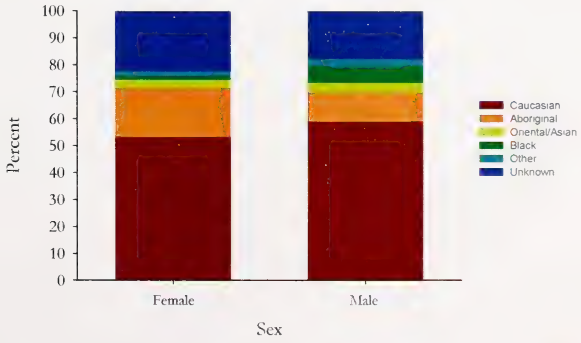
- While nine out of ten women who were newly diagnosed with chlamydia between 1998 and 2006 in Alberta received that diagnosis in a physician's office, only 67.5% of men did the same.

Ethnicity (see Tables 8.3.8 and 8.3.9)

Caucasians are the most common ethnic group for newly diagnosed chlamydia infections.

Female Aboriginal rates are higher than male Aboriginal rates.

Percent of Newly Reported Chlamydia Cases by Sex and Ethnicity, Alberta, 1998 - 2006 Combined



8.3 Alberta Data

Ethnicity **continued** (see Tables 8.3.8 and 8.3.9)

- More than half of the chlamydia cases that were newly diagnosed in Alberta between 1998 and 2006 were in persons of Caucasian ethnicity (59.0% of female cases, 53.3% of male cases).
- Sex differences were notable in the percentage of newly diagnosed chlamydia cases of Aboriginal ethnicity (18.2% of female cases, 10.7% of male cases), and of Black ethnicity (1.4% of female cases, 6.3% of male cases).
- Aboriginal ethnicity was predominant in Northern Lights (52.5% of cases), Aspen (35.1%), and Peace Country (28.3%) regions. Caucasians accounted for more than half of the cases in the remaining RHAs.

There were higher rates for Aboriginal ethnicity cases in northern parts of the province than in the rest of the province.

Repeat Infections (see Table 8.3.10)

- The vast majority (96.6%; 60,238 cases) of newly diagnosed cases of chlamydia infection from 1998 to 2006 were the only diagnosed infection in that year for each individual. This percentage did not vary significantly with time.
- In 2006, 4.4% of cases (428 cases) were second infections within that year, and 0.2% (16 cases) were third infections.

About 4% of chlamydia infections are second or third infections within a calendar year.

Limitations and Methodology Notes

A case definition for chlamydia appears in Appendix 15.5.

Ethnic groups are defined in the Glossary.

Repeat infections are newly diagnosed cases that occur within the same calendar year as a previously diagnosed infection.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 8.3.1. Newly Diagnosed Chlamydia Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly diagnosed cases	3,834	3,931	4,281	4,459	5,054	5,341	5,558	5,831	6,785	45,074
% female cases[1]	73.6	72.8	71.5	69.9	69.6	68.6	67.2	66.5	66.0	69.0
Rate (per 100,000 females)	268.0	268.6	288.2	294.7	327.2	340.5	349.5	361.2	410.2	325.1
Age-adjusted rate	264.3	262.1	282.3	287.2	316.6	328.6	336.6	349.4	397.9	315.7
Standard error of adjusted rate (SE)	4.2	4.2	4.3	4.3	4.4	4.5	4.5	4.6	4.8	1.5
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	1,371	1,468	1,709	1,924	2,204	2,442	2,713	2,942	3,500	20,273
% male cases[1]	26.3	27.2	28.5	30.1	30.4	31.4	32.8	33.5	34.0	31.0
Rate (per 100,000 males)	96.3	100.5	115.3	127.4	142.9	156.0	170.8	183.0	212.9	146.6
Age-adjusted rate	95.3	98.8	114.3	126.1	140.7	153.7	166.5	180.1	209.9	144.4
Standard error of adjusted rate (SE)	2.6	2.6	2.8	2.9	3.0	3.1	3.2	3.3	3.6	1.0
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	5,206	5,400	5,990	6,383	7,258	7,783	8,271	8,773	10,285	65,349
Rate (per 100,000 population)	182.4	184.7	201.8	211.2	235.1	248.3	260.2	272.3	311.9	236.0
Age-adjusted rate	179.2	179.4	197.2	205.4	227.3	239.8	250.2	263.5	302.7	228.8
Standard error of adjusted rate (SE)	2.5	2.4	2.5	2.6	2.7	2.7	2.7	2.8	3.0	0.9

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).

2. Includes cases with sex missing.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.2. Newly Diagnosed Chlamydia Cases, Percents, Rates, and Rate Ratios by First Nations Status, Sex, and Year, Alberta, 1998 to 2006

Female	98	99	00	01	02	03	04	05	06	98-06
First Nations										
Cases	624	658	841	963	1,037	1,078	1,067	1,098	1,212	8,578
% of cases[1]	85.2	84.1	80.5	79.5	81.1	80.9	78.1	77.6	77.3	80.0
Rate (per 100,000 First Nations females)	965.8	986.8	1226.3	1369.6	1442.7	1469.6	1426.9	1446.0	1571.6	1333.5
Age-adjusted rate	755.2	770.7	954.1	1067.4	1114.7	1124.4	1089.7	1112.2	1219.6	1030.0
Standard error of adjusted rate (SE)	30.4	30.2	32.8	34.3	34.3	33.9	33.1	33.4	34.8	11.1
Non-First Nations										
Cases	2,298	2,437	3,035	3,347	3,918	4,106	4,396	4,641	5,489	33,667
% of cases[1]	75.0	74.5	69.0	67.8	68.1	66.7	65.7	65.1	64.7	67.5
Rate (per 100,000 non-First Nations females)	168.2	174.5	214.2	232.0	266.0	274.6	290.1	301.7	348.1	254.6
Age-adjusted rate	168.5	172.5	212.5	229.0	260.4	268.6	282.8	295.5	341.7	250.4
Standard error of adjusted rate (SE)	3.5	3.5	3.8	3.9	4.1	4.2	4.3	4.3	4.6	1.4
Rate Ratio[2]										
Crude	5.7	5.7	5.7	5.9	5.4	5.4	4.9	4.8	4.5	5.2
Age-adjusted	4.5	4.5	4.5	4.7	4.3	4.2	3.9	3.8	3.6	4.1
Male	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	108	124	204	249	241	254	299	317	355	2,151
% of cases[1]	14.8	15.9	19.5	20.5	18.9	19.1	21.9	22.4	22.7	20.0
Rate (per 100,000 First Nations males)	166.7	184.9	295.1	351.1	332.3	343.3	396.5	415.0	458.7	332.1
Age-adjusted rate	142.5	160.0	248.7	290.5	283.0	284.6	327.2	341.9	380.1	277.4
Standard error of adjusted rate (SE)	14.1	14.9	17.8	18.7	18.9	18.1	19.2	19.4	20.4	6.1
Non-First Nations										
Cases	768	836	1,366	1,590	1,837	2,047	2,297	2,491	2,992	16,224
% of cases[1]	25.0	25.5	31.0	32.2	31.9	33.3	34.3	34.9	35.3	32.5
Rate (per 100,000 non-First Nations males)	56.5	60.0	96.7	110.5	125.0	137.2	151.8	162.7	191.0	123.1
Age-adjusted rate	56.6	59.7	96.7	110.5	124.2	136.7	149.4	161.9	190.3	122.5
Standard error of adjusted rate (SE)	2.0	2.1	2.6	2.8	2.9	3.0	3.1	3.3	3.5	1.0
Rate Ratio[2]										
Crude	3.0	3.1	3.1	3.2	2.7	2.5	2.6	2.6	2.4	2.7
Age-adjusted	2.5	2.7	2.6	2.6	2.3	2.1	2.2	2.1	2.0	2.3
All[3]	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	732	782	1,045	1,212	1,278	1,332	1,366	1,415	1,567	10,729
Rate (per 100,000 First Nations population)	565.7	584.7	758.8	858.1	885.0	904.0	909.5	929.0	1014.1	831.2
Age-adjusted rate	454.6	469.6	605.9	682.6	703.8	707.8	710.6	728.5	800.9	657.4
Standard error of adjusted rate (SE)	17.0	17.0	18.8	19.7	19.8	19.4	19.2	19.4	20.3	6.4
Non-First Nations										
Cases	3,066	3,273	4,401	4,937	5,755	6,153	6,693	7,132	8,481	49,891
Rate (per 100,000 non-First Nations population)	112.5	117.3	155.5	171.3	195.6	206.0	221.0	232.3	269.8	189.0
Age-adjusted rate	112.0	115.2	153.6	168.6	191.1	201.5	214.8	227.5	264.9	185.4
Standard error of adjusted rate (SE)	2.0	2.0	2.3	2.4	2.5	2.6	2.6	2.7	2.9	0.8
Rate Ratio[2]										
Crude	5.0	5.0	4.9	5.0	4.5	4.4	4.1	4.0	3.8	4.4
Age-adjusted	4.1	4.1	3.9	4.0	3.7	3.5	3.3	3.2	3.0	3.5

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes:
1. Percent of all cases of a given gender that were assigned to a given First Nations status, for a given year.
2. Ratio of the rate for First Nations to the rate for Non-First Nations.
3. Includes cases with sex missing.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.3. Newly Diagnosed Chlamydia Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	20	6	2	552	16,864	17,322	6,097	2,911	583	8
% female cases[1]	52.6	100.0	40.0	96.2	85.1	68.1	57.4	51.5	36.6	11.9
Rate (per 100,000 females)	11.6	0.9	0.2	55.6	1686.5	1745.9	612.6	134.7	15.2	0.4
Standard error (SE)	2.6	0.4	0.2	2.4	12.9	13.2	7.8	2.5	0.6	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	18	0	3	22	2,946	8,105	4,519	2,740	1,011	59
% male cases[1]	47.4	0.0	60.0	3.8	14.9	31.9	42.6	48.5	63.4	88.1
Rate (per 100,000 males)	10.0	-	0.3	2.1	280.8	805.2	453.4	127.8	25.9	3.3
Standard error (SE)	2.4	.	0.2	0.5	5.2	8.9	6.7	2.4	0.8	0.4
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	38	6	5	574	19,810	25,428	10,616	5,651	1,594	67
Rate (per 100,000 population)	10.8	0.4	0.3	28.2	966.8	1272.2	533.0	131.3	20.6	1.7
Standard error (SE)	1.8	0.2	0.1	1.2	6.8	7.9	5.2	1.7	0.5	0.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.4. Newly Diagnosed Chlamydia Cases and Rates by Sex and RHA, Alberta, 1998 to 2006 Combined

Female	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	2,080	1,146	14,153	4,516	816	13,570	2,968	2,938	1,662	45,074
% female cases[2]	75.6	64.5	66.9	73.6	70.9	68.5	78.0	76.1	67.5	69.0
Rate (per 100,000 females)	301.3	264.3	285.2	355.0	165.5	310.2	383.1	513.0	573.1	325.1
Age-adjusted rate	290.6	258.4	280.1	348.8	177.8	301.6	374.3	454.1	461.6	315.7
Standard error of adjusted rate (SE)	6.4	7.6	2.3	5.2	6.3	2.6	6.9	8.3	11.3	1.5
Male	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	673	630	6,996	1,619	335	6,230	835	922	801	20,273
% male cases[2]	24.4	35.5	33.1	26.4	29.1	31.5	22.0	23.9	32.5	31.0
Rate (per 100,000 males)	99.4	143.8	141.7	127.4	68.7	144.8	104.5	154.0	255.7	146.6
Age-adjusted rate	97.7	139.7	137.9	128.6	78.4	141.5	109.6	145.3	226.4	144.4
Standard error of adjusted rate (SE)	3.8	5.6	1.6	3.2	4.3	1.8	3.8	4.8	8.1	1.0
All[3]	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	2,753	1,776	21,149	6,135	1,151	19,800	3,803	3,860	2,463	65,349
Rate (per 100,000 population)	201.4	203.7	213.6	241.3	117.4	228.2	241.6	329.5	408.3	236.0
Age-adjusted rate	192.0	197.1	208.2	236.6	127.3	220.7	238.8	297.2	343.3	228.8
Standard error of adjusted rate (SE)	3.7	4.7	1.4	3.0	3.8	1.6	3.9	4.8	6.9	0.9

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases that were of a given gender, for a given RHA (column percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.5. Newly Diagnosed Chlamydia Cases and Rates by Year and RHA, Alberta, 2004 to 2006

2004	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	380	231	2,587	786	179	2,767	471	477	370	8,271
Rate (per 100,000 population)	246.6	231.7	225.1	270.9	162.4	278.4	267.3	358.2	515.0	260.2
Age-adjusted rate	232.4	220.4	218.4	260.3	174.3	266.6	265.4	320.4	427.5	250.2
Standard error of adjusted rate (SE)	12.1	14.6	4.3	9.4	13.2	5.1	12.4	14.7	22.2	2.7
2005	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	447	228	2,943	828	112	2,851	537	485	324	8,773
Rate (per 100,000 population)	288.6	226.0	251.3	281.7	101.4	283.6	304.5	358.6	439.8	272.3
Age-adjusted rate	269.2	218.4	246.0	270.3	110.0	273.5	298.0	325.7	368.4	263.5
Standard error of adjusted rate (SE)	12.9	14.5	4.5	9.5	10.5	5.1	13.0	14.8	20.5	2.8
2006	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	440	304	4,015	870	121	3,193	559	423	323	10,285
Rate (per 100,000 population)	281.0	296.9	332.4	289.8	108.8	310.7	315.1	304.3	427.5	311.9
Age-adjusted rate	265.0	291.6	327.3	279.0	116.6	299.1	302.9	272.0	359.8	302.7
Standard error of adjusted rate (SE)	12.8	16.8	5.1	9.5	10.8	5.3	12.9	13.3	20.3	3.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.6. Newly Diagnosed Chlamydia Cases and Percents by Sex and Treatment Agency, Alberta, 1998 to 2006

Female	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	1,659	1,823	408	40,156	45,074
% of cases[2]	3.7	4.0	0.9	89.1	100.0
Male	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	2,760	2,498	329	13,675	20,273
% of cases[2]	13.6	12.3	1.6	67.5	100.0
All[3]	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	4,419	4,321	737	53,833	65,349
% of cases[2]	6.8	6.6	1.1	82.4	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.7. Newly Diagnosed Chlamydia Cases and Percents by Year and Treatment Agency, Alberta, 2004 to 2006

2004	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta**[1]
Newly diagnosed cases	645	627	135	6,807	8,271
% of cases[2]	7.8	7.6	1.6	82.3	100.0
2005	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta**[1]
Newly diagnosed cases	742	602	90	7,010	8,773
% of cases[2]	8.5	6.9	1.0	79.9	100.0
2006	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta**[1]
Newly diagnosed cases	827	694	96	8,564	10,285
% of cases[2]	8.0	6.7	0.9	83.3	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.8. Newly Reported Chlamydia Cases and Percents by Ethnicity and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
Caucasian			
Cases	24,015	11,967	35,982
% of cases[2]	53.3	59.0	55.1
First Nations			
Cases	7,371	1,865	9,236
% of cases[2]	16.4	9.2	14.1
Metis			
Cases	796	292	1,088
% of cases[2]	1.8	1.4	1.7
Inuit			
Cases	19	4	23
% of cases[2]	0.0	0.0	0.0
Oriental			
Cases	1,201	570	1,771
% of cases[2]	2.7	2.8	2.7
Other, Asian			
Cases	161	155	316
% of cases[2]	0.4	0.8	0.5
Black			
Cases	632	1,273	1,905
% of cases[2]	1.4	6.3	2.9
Other, Specify			
Cases	707	489	1,196
% of cases[2]	1.6	2.4	1.8
Unknown			
Cases	10,172	3,657	13,831
% of cases[2]	22.6	18.0	21.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.
2. Percent of all cases of a given ethnicity for a given sex (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.9. Newly Diagnosed Chlamydia Cases and Percents by Ethnicity and RHA, Alberta, 1998 to 2006 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Caucasian										
Cases	1,533	1,038	12,774	3,535	788	10,458	1,627	1,807	838	35,982
% of cases[2]	55.7	58.4	60.4	57.6	68.5	52.8	42.8	46.8	34.0	55.1
First Nations										
Cases	571	40	1,192	1,244	54	2,514	1,214	1,007	1,139	9,236
% of cases[2]	20.7	2.3	5.6	20.3	4.7	12.7	31.9	26.1	46.2	14.1
Metis										
Cases	5	4	63	34	8	563	121	86	154	1,088
% of cases[2]	0.2	0.2	0.3	0.6	0.7	2.8	3.2	2.2	6.3	1.7
Inuit										
Cases	1	0	3	3	0	15	0	1	0	23
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Oriental										
Cases	42	19	928	26	8	666	11	15	9	1,771
% of cases[2]	1.5	1.1	4.4	0.4	0.7	3.4	0.3	0.4	0.4	2.7
Other, Asian										
Cases	2	1	136	10	2	133	1	3	4	316
% of cases[2]	0.1	0.1	0.6	0.2	0.2	0.7	0.0	0.1	0.2	0.5
Black										
Cases	10	99	753	22	12	822	3	11	9	1,905
% of cases[2]	0.4	5.6	3.6	0.4	1.0	4.2	0.1	0.3	0.4	2.9
Other, Specify										
Cases	14	12	462	37	7	527	22	21	23	1,196
% of cases[2]	0.5	0.7	2.2	0.6	0.6	2.7	0.6	0.5	0.9	1.8
Unknown										
Cases	575	563	4,838	1,224	272	4,101	804	909	287	13,832
% of cases[2]	20.9	31.7	22.9	20.0	23.6	20.7	21.1	23.5	11.7	21.2

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given ethnicity for a given RHA (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 8.3.10. Newly Diagnosed Chlamydia Cases and Percents by Repeat Infection Frequency and Year, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	Alberta[1]
1 infection										
Cases	4,865	5,041	5,473	5,950	6,633	7,203	7,620	8,084	9,369	60,238
% of cases[2]	96.7	96.6	95.6	96.6	95.6	96.2	96.1	96.0	95.4	96.0
2 infections										
Cases	158	166	240	205	283	265	289	314	428	2,348
% of cases[2]	3.1	3.2	4.2	3.3	4.1	3.5	3.6	3.7	4.4	3.7
3 infections										
Cases	7	9	11	5	17	14	23	16	16	118
% of cases[2]	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.2	0.2
4 infections										
Cases	1	0	1	2	2	2	1	2	3	14
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 infections										
Cases	0	0	0	0	0	0	0	1	0	1
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given repeated infection for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

9.

Gonorrhea

9.1 Fundamentals

9.2 National and International Data

9.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

Alberta

9.1 Fundamentals

Gonorrhea is second in frequency only to chlamydia among reportable STIs in Alberta.

Gonorrhea is a sexually-transmitted infection caused by the bacterium *Neisseria gonorrhoeae*. After chlamydia, gonorrhea is the second most commonly reported sexually transmitted infection in Alberta.

Symptomatic patients exhibit purulent genital discharge, urethritis, and painful urination. Gonorrhea infections can be asymptomatic, especially in women. The most common manifestation of gonorrhea in newborn infants is eye infection, which can result in blindness if not treated. [45]

Untreated cases of gonorrhea can result in lifelong consequences.

Gonorrhea can cause serious complications. Females may develop PID, potentially leading to chronic abdominal pain, infertility, or ectopic pregnancy. Males may develop epididymitis or (rarely) infertility. In rare cases, gonorrhea can spread to the bloodstream and joints. Reactive arthritis can develop in both females and males. [39]

HIV is more easily transmitted in the presence of gonorrhea.

Persons with gonorrhea have an increased likelihood of contracting HIV, and HIV-infected individuals more easily transmit HIV to others if they are co-infected with gonorrhea. [43]

Unprotected sexual activity is the most common mode of transmission for gonorrhea infection.

People at risk of contracting gonorrhea include those having unprotected sex with someone from an area where gonorrhea is endemic, sex workers and those who have sex with them, sexually active youth (<25 years of age) with multiple partners, street youth, men who have unprotected sex with men, and those with previous history of sexually transmitted infections. [39]

Gonorrhea is often curable with a single dose of antibiotics. However, some strains are resistant to certain antibiotics, complicating treatment. Resistance is increasing in frequency in Canada, and varies substantially by region. [39] Ciproflaxin resistance is now prevalent in Alberta and in 2007 the provincial treatment guidelines were changed, replacing ciproflaxin with cefixime as the first line recommended agent.

9.2 National and International Data

In a single year, more than 60 million new cases of gonorrhea occur worldwide.

The World Health Organization estimated that in 1999, there were 62 million *new* cases of gonorrhea in adults, including 1.5 million new adult cases that year in North America. [41]

The gonorrhea rate has been rising in Canada since 1998. There are more male cases than female cases.

In 1981, the rate of newly reported cases of gonorrhea (including both children and adults) was 227.0 (per 100,000 population) in Canada. This rate declined steadily until 1997, when the rate was 14.9. From 1998 on, the gonorrhea rate has increased in Canada. In 2006, there were 10,808 cases of gonorrhea reported, for a rate of 33.1. The 2006 rate for males was 40.4, compared with 25.9 for females. This is a ratio of about 1.6 newly reported male cases for every newly reported female case. [42, 43]

Gonorrhea infections occur at the highest rate among young people.

For females, rates peak for 15 to 19 year olds (137.1 per 100,000 females in 2006) and remain high for 20 to 24 year olds (122.1). For males, rates peak for 20 to 24 year olds (135.0 per 100,000 males in 2006) and remain high for 25 to 29 year olds (105.6). [42]

The rate of newly reported cases of gonorrhea is higher in Alberta than in Canada as a whole.

The Alberta rate of newly reported cases of gonorrhea is typically higher than the national average. During the 1980s, the Albertan rate was substantially higher than the Canadian rate. In the 1990s, the rate differential was generally small.

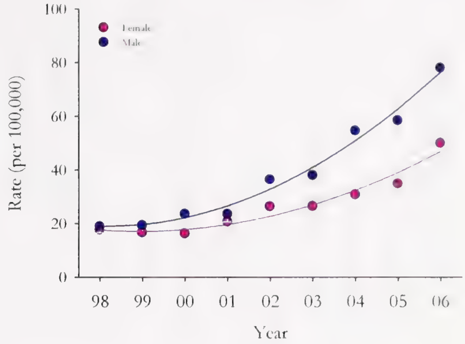
From 2001 on, the Alberta gonorrhea rate increased at a faster rate than the rate for Canada as a whole. In 2006, the rate of newly reported cases of gonorrhea in Alberta was 63.7 (per 100,000 population). The Canadian rate for that year was 33.1. Gonorrhea rates for 2006 were high across the prairie provinces. [43,44]

9.3 Alberta Data

Gonorrhea rates are increasing in Alberta. The rate of increase is greater in males than in females.

Time Trends (see Table 9.3.1)

Age-Adjusted Rate of Newly Reported Gonorrhea Cases by Sex, Alberta, 1998 - 2006

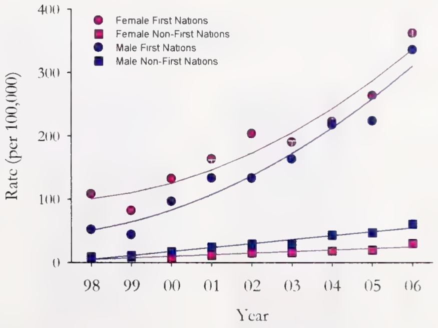


- For 1998 to 2006 combined, the rate of newly diagnosed gonorrhea cases in Alberta increased for both males and females, but especially for males. There was a particularly notable increase for both males and females in 2006.
- In 2006 there were 1,282 newly diagnosed male cases of gonorrhea, for a rate of 77.9 (per 100,000 males).
- There were 842 newly female cases in 2006, with a rate of 49.9 (per 100,000 females).

Newly diagnosed cases of gonorrhea occur at higher rates in the First Nations population than in the non-First Nations population. This is especially true for females.

Time Trends by First Nations Status (see Table 9.3.2)

Age-Adjusted Rate of Newly Reported Gonorrhea Cases by Sex and First Nations Status, Alberta, 1998 - 2006



- While rates of newly diagnosed gonorrhea infections increased from 1998 to 2006 for First Nations and non-First Nations individuals, the rates were markedly higher for First Nations individuals. During this time period, persons with First Nations status made up 4.7% of the Alberta population, but 30.8% of gonorrhea infections.

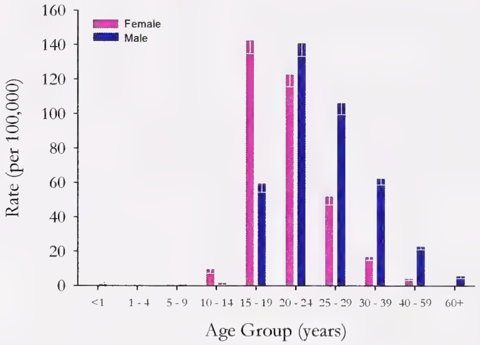
9.3 Alberta Data

Time Trends by First Nations Status continued
(see Table 9.3.2)

- For First Nations female cases, the rate increased from 108.2 (per 100,000 First Nations females) in 1998 to 361.4 in 2006. For non-First Nations females, the rate increased from 8.2 to 30.3 (per 100,000 non-First Nations females). The First Nations female rate was 11.9 times the non-First Nations female rate in 2006.
- For First Nations male cases, the rate increased from 52.1 (per 100,000 First Nations males) in 1998 to 335.3 in 2006. For non-First Nations males, the rate increased from 8.9 to 60.6 (per 100,000 non-First Nations males). The First Nations male rate was 5.5 times the non-First Nations male rate in 2006.

Age Effects (see Table 9.3.3)

Rate of Newly Reported Gonorrhea Cases by Sex and Age Group, Alberta, 1998 - 2006 Combined



For females, the highest rates of newly diagnosed cases of gonorrhea occur in 15 to 24 year olds.

For males, rates are highest in 20 to 29 year olds.

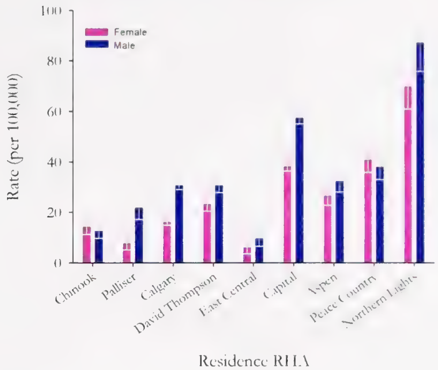
- For males, newly diagnosed gonorrhea infection rates for 1998 to 2006 combined were highest in 20 to 29 year olds, with the highest rate in the 20 to 24 year old age group (140.5 per 100,000 males).
- For females, the highest rates were in 15 to 24 year olds, particularly 15 to 19 year olds (142.3 per 100,000 females).

9.3 Alberta Data

Rates of newly diagnosed cases of gonorrhea are highest in the Northern Lights region, and lowest in the East Central region.

Geographic Areas (see Tables 9.3.4 and 9.3.5)

Age-Adjusted Rate of Newly Reported Gonorrhea Cases by Sex and RHA, Alberta, 1998 - 2006 Combined

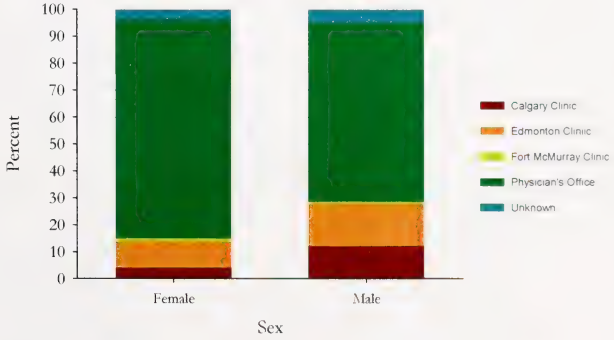


- Regional variation in newly diagnosed gonorrhea infections is high. From 1998 to 2006, the highest rates of newly diagnosed cases of gonorrhea occurred in Northern Lights region (87.0 per 100,000 males) and Capital region (57.3). The lowest male rate was in East Central region (9.5).
- The highest rate for females was in Northern Lights region (69.7 per 100,000 females), while the lowest rates were in East Central (6.0) and Palliser region (7.7).
- Three year trends show that the 2006 rate increase occurred in most RHAs.

Women are more likely than men to be diagnosed with gonorrhea at physicians' offices.

Treatment Agencies (see Tables 9.3.6 and 9.3.7)

Percent of Newly Reported Gonorrhea Cases by Sex and Treatment Agency, Alberta, 1998 - 2006 Combined



9.3 Alberta Data

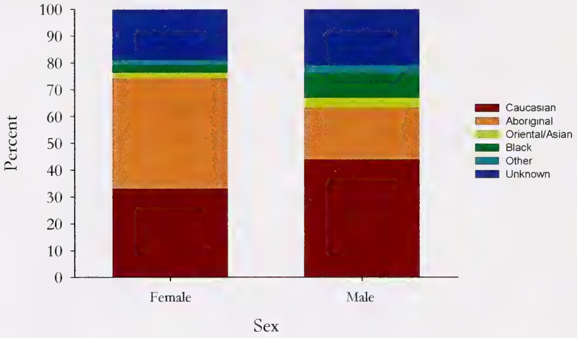
Treatment Agencies continued (see Tables 9.3.6 and 9.3.7)

- As with chlamydia, males and females differ in the treatment agencies used for diagnosis of newly diagnosed gonorrhea infections.
- For 1998 to 2006 combined, 81.4% of newly diagnosed female gonorrhea cases were diagnosed in physician's offices, compared with 66.4% of newly diagnosed male cases.

Ethnicity (see Tables 9.3.8 and 9.39)

Aboriginal ethnicity is more common in female gonorrhea infections than in male gonorrhea infections.

Percent of Newly Reported Gonorrhea Cases by Sex and Ethnicity, Alberta, 1998 - 2006 Combined



- Between 1998 and 2006, male newly diagnosed cases of gonorrhea were dominated by persons of Caucasian ethnicity (43.9% of male cases), with a smaller percentage of Aboriginal individuals (19.3%).
- Female newly diagnosed gonorrhea infections, however, included 41.2% Aboriginal individuals and 33.1% Caucasians.
- The percentages of cases of Oriental/Asian and Black ethnicities were higher for males than for females.
- Geographically, the percentage of Aboriginal cases was highest in Northern Lights region (75.8%; this region has a large Aboriginal population), and Caucasian cases were most predominant in East Central and Calgary regions (59.4% and 52.7%, respectively).

Aboriginal ethnicity is more common in gonorrhea infections in Northern Lights region than in other regions, while Caucasians form the majority in East Central and Calgary regions.

Repeat Infections (see Table 9.3.10)

About 4% of gonorrhea infections are the second infection in a year.

- Between 1998 and 2006, there was a slight decrease in the percentage of newly diagnosed gonorrhea infections that were the only infection in that year for each case. This was accompanied by a small increase in the percentage of second infections in a year.
- In 2006, 95.8% of newly diagnosed gonorrhea cases were the only infections that year, and 4.0% (82 cases) were second infections within the calendar year.

9.3 Alberta Data

Limitations and Methodology Notes

A case definition for gonorrhea appears in Appendix 15.5.

Ethnic groups are defined in the Glossary.

Repeat infections are newly diagnosed cases that occur within the same calendar year as a previously diagnosed infection.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 9.3.1. Newly Diagnosed Gonorrhea Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	256	248	240	318	414	431	504	576	842	3,829
% female cases[1]	48.7	46.8	41.1	40.5	42.7	42.0	36.9	38.1	39.6	40.6
Rate (per 100,000 females)	17.9	16.9	16.2	21.0	26.8	27.5	31.7	35.7	50.9	27.6
Age-adjusted rate	17.6	16.6	16.2	20.6	26.3	26.4	30.7	34.8	49.9	27.0
Standard error of adjusted rate (SE)	1.1	1.0	1.0	1.2	1.3	1.3	1.4	1.5	1.7	0.4
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	270	281	344	467	555	596	862	935	1,282	5,592
% male cases[1]	51.3	53.0	58.9	59.5	57.3	58.0	63.1	61.8	60.3	59.3
Rate (per 100,000 males)	19.0	19.2	23.2	30.9	36.0	38.1	54.3	58.2	78.0	40.5
Age-adjusted rate	18.9	19.3	23.5	31.3	36.3	37.9	54.5	58.3	77.9	40.5
Standard error of adjusted rate (SE)	1.2	1.2	1.3	1.5	1.6	1.6	1.9	1.9	2.2	0.5
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	526	530	584	785	969	1,027	1,367	1,512	2,125	9,425
Rate (per 100,000 population)	18.4	18.1	19.7	26.0	31.4	32.8	43.0	46.9	64.4	34.0
Age-adjusted rate	18.2	17.9	19.8	25.9	31.3	32.2	42.6	46.4	63.8	33.7
Standard error of adjusted rate (SE)	0.8	0.8	0.8	0.9	1.0	1.0	1.2	1.2	1.4	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.2. Newly Diagnosed Gonorrhea Cases, Percents, Rates, and Rate Ratios by First Nations Status, Sex, and Year, Alberta, 1998 to 2006

Female	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	89	66	113	144	178	180	212	257	345	1,584
% of cases[1]	73.6	67.3	61.4	59.0	62.0	57.7	53.9	57.5	54.8	58.3
Rate (per 100,000 First Nations females)	137.7	99.0	164.8	204.8	247.6	245.4	283.5	338.5	447.3	246.2
Age-adjusted rate	108.2	81.9	132.3	163.3	203.0	189.9	222.2	263.1	361.4	195.2
Standard error of adjusted rate (SE)	12.1	10.6	12.8	14.0	15.6	14.4	15.9	16.6	19.8	5.0
Non-First Nations										
Cases	112	127	109	169	230	241	284	311	483	2,066
% of cases[1]	47.9	45.2	31.0	32.7	35.0	35.7	30.4	30.3	33.9	33.9
Rate (per 100,000 non-First Nations females)	8.2	9.1	7.7	11.7	15.6	16.1	18.7	20.2	30.6	15.6
Age-adjusted rate	8.2	9.0	7.8	11.6	15.4	15.8	18.4	19.9	30.3	15.4
Standard error of adjusted rate (SE)	0.8	0.8	0.7	0.9	1.0	1.0	1.1	1.1	1.4	0.3
Rate Ratio[2]										
Crude	16.8	10.9	21.4	17.5	15.9	15.2	15.1	16.7	14.6	15.8
Age-adjusted	13.2	9.1	17.0	14.1	13.2	12.0	12.1	13.2	11.9	12.7
Male	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	32	32	71	100	109	132	180	190	285	1,131
% of cases[1]	26.4	32.7	38.6	41.0	38.0	42.3	45.8	42.5	45.2	41.6
Rate (per 100,000 First Nations males)	49.4	47.7	102.7	141.0	150.3	178.4	238.7	248.7	368.2	174.6
Age-adjusted rate	52.1	44.0	96.4	133.2	133.1	163.0	217.1	223.2	335.3	160.6
Standard error of adjusted rate (SE)	11.1	8.3	11.9	14.9	13.1	15.0	16.8	17.4	20.9	5.1
Non-First Nations										
Cases	122	154	243	348	427	435	650	714	940	4,033
% of cases[1]	52.1	54.8	69.0	67.3	65.0	64.3	69.6	69.7	66.1	66.1
Rate (per 100,000 non-First Nations males)	9.0	11.1	17.2	24.2	29.1	29.2	43.0	46.6	60.0	30.6
Age-adjusted rate	8.9	11.2	17.4	24.5	29.4	29.3	43.4	47.2	60.6	30.9
Standard error of adjusted rate (SE)	0.8	0.9	1.1	1.3	1.4	1.4	1.7	1.8	2.0	0.5
Rate Ratio[2]										
Crude	5.5	4.3	6.0	5.8	5.2	6.1	5.6	5.3	6.1	5.7
Age-adjusted	5.9	3.9	5.5	5.4	4.5	5.6	5.0	4.7	5.5	5.2
All[3]	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Cases	121	98	184	244	287	312	393	447	630	2,716
Rate (per 100,000 First Nations population)	93.5	73.3	133.6	172.8	198.7	211.7	261.7	293.5	407.7	210.4
Age-adjusted rate	80.8	63.2	114.8	148.4	168.5	176.2	220.1	242.8	347.9	178.1
Standard error of adjusted rate (SE)	8.2	6.7	8.7	10.2	10.2	10.3	11.6	12.0	14.3	3.6
Non-First Nations										
Cases	234	281	352	517	657	676	934	1,025	1,423	6,099
Rate (per 100,000 non-First Nations population)	8.6	10.1	12.4	17.9	22.3	22.6	30.8	33.4	45.3	23.1
Age-adjusted rate	8.5	10.1	12.6	18.0	22.4	22.5	30.9	33.5	45.3	23.1
Standard error of adjusted rate (SE)	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	0.3
Rate Ratio[2]										
Crude	10.9	7.3	10.7	9.6	8.9	9.4	8.5	8.8	9.0	9.1
Age-adjusted	9.5	6.3	9.1	8.2	7.5	7.8	7.1	7.2	7.7	7.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given gender that were assigned to a given First Nations status, for a given year.
2. Ratio of the rate for First Nations to the rate for Non-First Nations.
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.3. Newly Diagnosed Gonorrhea Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	3	93	1,423	1,215	514	357	144	3
% female cases[1]	0.0	-	50.0	86.9	69.7	46.2	32.7	21.2	14.0	3.0
Rate (per 100,000 females)	-	-	0.3	9.4	142.3	122.5	51.6	16.5	3.8	0.1
Standard error (SE)	-	-	0.2	1.0	3.8	3.5	2.3	0.9	0.3	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	1	0	3	14	620	1,414	1,055	1,329	883	97
% male cases[1]	100.0	-	50.0	13.1	30.3	53.8	67.2	78.8	86.0	97.0
Rate (per 100,000 males)	0.6	-	0.3	1.3	59.1	140.5	105.9	62.0	22.6	5.4
Standard error (SE)	0.6	.	0.2	0.4	2.4	3.7	3.3	1.7	0.8	0.6
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	1	0	6	107	2,043	2,630	1,570	1,687	1,027	100
Rate (per 100,000 population)	0.3	-	0.3	5.3	99.7	131.6	78.8	39.2	13.3	2.6
Standard error (SE)	0.3	.	0.1	0.5	2.2	2.6	2.0	1.0	0.4	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.4. Newly Diagnosed Gonorrhea Cases and Rates by Sex and RHA, Alberta, 1998 to 2006 Combined

Female	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	95	34	813	290	28	1,706	205	262	241	3,829
% female cases[2]	54.6	26.8	34.3	50.3	40.6	40.8	46.1	52.8	46.3	40.6
Rate (per 100,000 females)	13.8	7.8	16.4	22.8	5.7	39.0	26.5	45.7	83.1	27.6
Age-adjusted rate	14.2	7.7	16.1	23.2	6.0	38.1	26.5	40.7	69.7	27.0
Standard error of adjusted rate (SE)	1.5	1.3	0.6	1.4	1.2	0.9	1.9	2.5	4.5	0.4
Male	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	79	93	1,552	286	41	2,478	240	234	279	5,592
% male cases[2]	45.4	73.2	65.6	49.7	59.4	59.2	53.9	47.2	53.7	59.3
Rate (per 100,000 males)	11.7	21.2	31.4	22.5	8.4	57.6	30.0	39.1	89.1	40.5
Age-adjusted rate	12.5	21.7	30.6	23.3	9.5	57.3	32.2	37.9	87.0	40.5
Standard error of adjusted rate (SE)	1.4	2.3	0.8	1.4	1.5	1.2	2.1	2.5	5.7	0.5
All[3]	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed cases	174	127	2,367	576	69	4,185	445	496	520	9,425
Rate (per 100,000 population)	12.7	14.6	23.9	22.7	7.0	48.2	28.3	42.3	86.2	34.0
Age-adjusted rate	13.3	15.0	23.3	23.2	7.7	47.5	29.3	39.3	79.0	33.7
Standard error of adjusted rate (SE)	1.0	1.3	0.5	1.0	0.9	0.7	1.4	1.8	3.7	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases that were of a given gender, for a given RHA (column percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.5. Newly Diagnosed Gonorrhea Cases and Rates by Year and RHA, Alberta, 2004 to 2006

2004	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	15	26	302	97	8	712	49	75	78	1,367
Rate (per 100,000 population)	9.7	26.1	26.3	33.4	7.3	71.6	27.8	56.3	108.6	43.0
Age-adjusted rate	10.0	26.0	25.8	34.0	6.9	70.4	29.4	51.9	98.6	42.6
Standard error of adjusted rate (SE)	2.7	5.2	1.5	3.5	2.6	2.7	4.3	6.0	11.4	1.2
2005	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	36	31	384	96	9	687	66	112	85	1,512
Rate (per 100,000 population)	23.2	30.7	32.8	32.7	8.1	68.3	37.4	82.8	115.4	46.9
Age-adjusted rate	23.5	32.4	32.1	33.1	9.1	67.4	39.5	76.5	106.6	46.4
Standard error of adjusted rate (SE)	4.0	5.9	1.6	3.4	3.2	2.6	4.9	7.3	12.6	1.2
2006	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	48	22	625	153	23	909	91	104	132	2,125
Rate (per 100,000 population)	30.7	21.5	51.7	51.0	20.7	88.5	51.3	74.8	174.7	64.4
Age-adjusted rate	32.2	22.5	50.6	51.4	22.6	86.8	51.6	73.3	161.0	63.8
Standard error of adjusted rate (SE)	4.8	4.9	2.0	4.2	4.8	2.9	5.5	7.3	15.4	1.4

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.6. Newly Diagnosed Gonorrhea Cases and Percents by Sex and Treatment Agency, Alberta, 1998 to 2006

Female	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	158	369	43	3,118	3,829
% of cases[2]	4.1	9.6	1.1	81.4	100.0
Male	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	683	876	38	3,715	5,592
% of cases[2]	12.2	15.7	0.7	66.4	100.0
All[3]	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	842	1,245	81	6,836	9,425
% of cases[2]	8.9	13.2	0.9	72.5	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.7. Newly Diagnosed Gonorrhea Cases and Percents by Year and Treatment Agency, Alberta, 2004 to 2006

2004	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	109	220	11	1,008	1,367
% of cases[2]	8.0	16.1	0.8	73.7	100.0

2005	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	159	217	10	1,005	1,512
% of cases[2]	10.5	14.4	0.7	66.5	100.0

2006	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	255	278	25	1,538	2,125
% of cases[2]	12.0	13.1	1.2	72.4	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.8. Newly Reported Gonorrhea Cases and Percents by Ethnicity and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
Caucasian			
Cases	**1,269**	**2,457**	**3,727**
% of cases[2]	**33.1**	**43.9**	**39.5**
First Nations			
Cases	**1,418**	**981**	**2,399**
% of cases[2]	**37.0**	**17.5**	**25.5**
Metis			
Cases	**155**	**99**	**254**
% of cases[2]	**4.0**	**1.8**	**2.7**
Inuit			
Cases	**5**	**0**	**5**
% of cases[2]	**0.1**	**0.0**	**0.1**
Oriental			
Cases	**54**	**151**	**205**
% of cases[2]	**1.4**	**2.7**	**2.2**
Other, Asian			
Cases	**20**	**49**	**69**
% of cases[2]	**0.5**	**0.9**	**0.7**
Black			
Cases	**117**	**531**	**648**
% of cases[2]	**3.1**	**9.5**	**6.9**
Other, Specify			
Cases	**67**	**144**	**211**
% of cases[2]	**1.7**	**2.6**	**2.2**
Unknown			
Cases	**724**	**1,180**	**1,907**
% of cases[2]	**18.9**	**21.1**	**20.2**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.
2. Percent of all cases of a given ethnicity for a given sex (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.9. Newly Diagnosed Gonorrhea Cases and Percents by Ethnicity and RHA, Alberta, 1998 to 2006 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Caucasian										
Cases	**45**	**54**	**1,248**	**171**	**41**	**1,674**	**93**	**106**	**60**	**3,727**
% of cases[2]	**25.9**	**42.5**	**52.7**	**29.7**	**59.4**	**40.0**	**20.9**	**21.4**	**11.5**	**39.5**
First Nation										
Cases	**93**	**3**	**268**	**280**	**6**	**824**	**250**	**226**	**375**	**2,399**
% of cases[2]	**53.4**	**2.4**	**11.3**	**48.6**	**8.7**	**19.7**	**56.2**	**45.6**	**72.1**	**25.5**
Metis										
Cases	**0**	**0**	**12**	**3**	**2**	**171**	**14**	**19**	**19**	**254**
% of cases[2]	**0.0**	**0.0**	**0.5**	**0.5**	**2.9**	**4.1**	**3.1**	**3.8**	**3.7**	**2.7**
Inuit										
Cases	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**5**
% of cases[2]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**
Oriental										
Cases	**0**	**0**	**71**	**3**	**1**	**117**	**1**	**3**	**0**	**205**
% of cases[2]	**0.0**	**0.0**	**3.0**	**0.5**	**1.4**	**2.8**	**0.2**	**0.6**	**0.0**	**2.2**
Other, Asian										
Cases	**0**	**0**	**23**	**0**	**0**	**38**	**0**	**1**	**1**	**69**
% of cases[2]	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.9**	**0.0**	**0.2**	**0.2**	**0.7**
Black										
Cases	**0**	**40**	**231**	**8**	**0**	**323**	**1**	**3**	**1**	**648**
% of cases[2]	**0.0**	**31.5**	**9.8**	**1.4**	**0.0**	**7.7**	**0.2**	**0.6**	**0.2**	**6.9**
Other, Specify										
Cases	**0**	**0**	**74**	**3**	**0**	**111**	**6**	**5**	**2**	**211**
% of cases[2]	**0.0**	**0.0**	**3.1**	**0.5**	**0.0**	**2.7**	**1.3**	**1.0**	**0.4**	**2.2**
Unknown										
Cases	**36**	**30**	**439**	**108**	**19**	**924**	**80**	**133**	**62**	**1,907**
% of cases[2]	**20.7**	**23.6**	**18.5**	**18.8**	**27.5**	**22.1**	**18.0**	**26.8**	**11.9**	**20.2**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given ethnicity for a given RHA (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 9.3.10. Newly Diagnosed Gonorrhea Cases and Percents by Repeat Infection Frequency and Year, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	Alberta[1]
1 infection										
Cases	506	523	537	738	907	943	1,281	1,364	1,948	8,747
% of cases[2]	98.1	99.4	96.1	97.0	96.8	95.8	96.9	95.2	95.8	96.4
2 infections										
Cases	10	2	19	22	28	39	37	60	82	299
% of cases[2]	1.9	0.4	3.4	2.9	3.0	4.0	2.8	4.2	4.0	3.3
3 infections										
Cases	0	1	3	1	2	2	4	8	3	24
% of cases[2]	0.0	0.2	0.5	0.1	0.2	0.2	0.3	0.6	0.1	0.3
4 infections										
Cases	0	0	0	0	0	0	0	1	1	2
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given repeated infection for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

10.

Infectious Syphilis and Congenital Syphilis

10.1 Fundamentals

10.2 National and International Data

10.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

Alberta

10.1 Fundamentals

Syphilis is caused by infection with *Treponema pallidum.* Infectious syphilis includes the primary, secondary, and early latent stages of infection.

Primary syphilis is marked by the development of a chancre, which may not be noticed. Secondary syphilis may involve rash, fever, malaise, or other symptoms. The early latent phase occurs up to one year after initial infection. The disease is infectious from initial infection through the early latent phase.

Primary syphilis is characterized by one or more painless chancres (sores) appearing about three weeks after infection. These chancres often go unnoticed. Secondary syphilis occurs one to two months after the primary chancre has disappeared, and may result in rash, fever, malaise, headache, lymphadenopathy (swollen glands), mucous lesions, condyloma lata (wart-like lesions), meningitis, or hair loss. Symptoms usually disappear after a few weeks, but relapses can occur for up to one year. This one year period is called the early latent phase, and is considered part of infectious syphilis because of the possibility of relapse to secondary syphilis. [39, 43]

Syphilis is transmitted through direct contact with an infectious lesion.

Syphilis can be transmitted through direct contact with syphilis chancres via vaginal, oral, or anal sex with an infectious person. There is an estimated risk of transmission of 60% per partner. Recent outbreaks in Calgary and Edmonton have been linked to the sex trade and men who have sex with men but new cases have occurred across all age groups, ethnicities, and socioeconomic groups. [39]

Mothers can transmit syphilis to their infants during pregnancy or childbirth.

Mother to infant transmission can occur. Infection usually occurs in utero, but can also occur as a result of contact with an active genital lesion during delivery. Infection is more likely when mothers are in the early stages of the disease. About 40% of pregnancies in women with infectious syphilis end in fetal death. Surviving infants develop congenital syphilis. Congenital syphilis has serious consequences for infants, potentially resulting in skin lesions, disseminated infection, anemia, enlarged liver and spleen, brain infection, or death. [39, 47, 48]

Syphilis is treatable with antibiotics.

Syphilis can be treated with antibiotics. Pregnant women can be treated during pregnancy to reduce the risk of congenital syphilis in their babies. [39]

The presence of a syphilis infection increases the likelihood of HIV transmission or acquisition. [45]

10.2 National and International Data

Most cases of syphilis worldwide occur in developing countries.

Internationally, there were an estimated 11.8 million new cases of infectious syphilis in adults in 1999. More than 90% of these cases occurred in developing countries. The rate of new cases is rapidly increasing in Eastern Europe, and outbreaks among men who have sex with men have recently occurred in Europe and North America. [41,49]

Infectious syphilis was on the verge of elimination in Canada very recently, but has resurged.

Prior to 2001, there were fewer than 200 newly reported cases of infectious syphilis in Canada each year. The rate was as low as 0.4 (per 100,000 population) in 1997. By 2006, there were 1,493 newly cases nationally, for a rate of 4.6. This is a rate increase of more than ten-fold in a ten-year period. [42, 43]

Newly reported male cases of infectious syphilis are much more frequent than female cases in Canada.

Rates of new cases of infectious syphilis in Canada in 2006 were highest in 30 to 39 year olds, followed by 40 to 59 year olds. Males were approximately six times more likely than females to have newly reported cases of infectious syphilis. In 2006, the rate was 8.0 for males and 1.3 for females. [42]

In 2005, the rate of newly reported cases of infectious syphilis in Alberta was higher than in Canada.

Until 2005, rates of newly reported cases of infectious syphilis were lower in Alberta than in Canada as a whole. In 2006, the Albertan rate (6.5 per 100,000 population) was again higher than the Canadian rate (4.6). Only British Columbia had a higher provincial rate (7.7) than Alberta in 2006. [44]

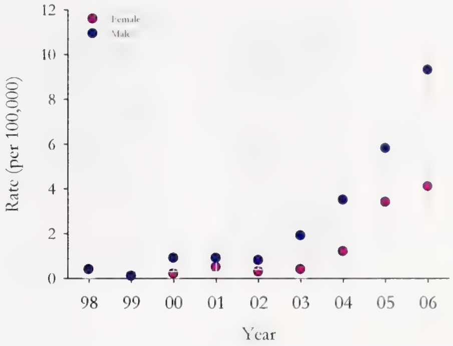
Worldwide, at least 500,000 infants are born with congenital syphilis each year. [50] Increasing rates of infectious syphilis have led to increasing rates of congenital syphilis in Canada. Between 1995 and 2004, there were fewer than 2 congenital syphilis cases reported in all of Canada each year. However, in 2005 and 2006 there were 8 cases each year in Canada (these data are preliminary). [48] As seen in the following section, Alberta alone reported 9 cases in 2005 and 2006.

10.3 Alberta Data

There are rapidly increasing rates of newly diagnosed infectious syphilis cases in Alberta.

Time Trends (see Table 10.3.1)

Age-Adjusted Rate of Newly Reported Infectious Syphilis Cases by Sex, Alberta, 1998 - 2006

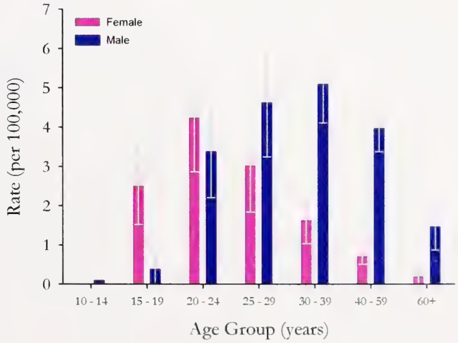


- Up to 2003, the overall newly diagnosed infectious syphilis rate was below 2 (per 100,000 population) in Alberta. However, beginning in 2004, the rate went above 2.0, and by 2006 was 6.7 (218 cases).
- For males, the rate of newly diagnosed cases of infectious syphilis increased from 0.4 (per 100,000 males) in 1998 to 9.3 in 2006. More than two in every three newly diagnosed infectious syphilis cases in Alberta are male.
- There were no female cases in 1998. By 2006, the female rate was 4.1 (per 100,000 females).

For females, rates of newly diagnosed infectious syphilis cases peak at 20 to 24 years. The highest rate for males is in the 30 to 39 year age group.

Age Groups (see Table 10.3.2)

Rate of Newly Reported Infectious Syphilis Cases by Sex and Age Group, Alberta, 1998 - 2006 Combined



- For males, the rate of newly diagnosed cases of infectious syphilis peaked at 5.1 (per 100,000 males) in 30 to 39 year olds and decreased with age thereafter, for 1998 to 2006 combined.

10.3 Alberta Data

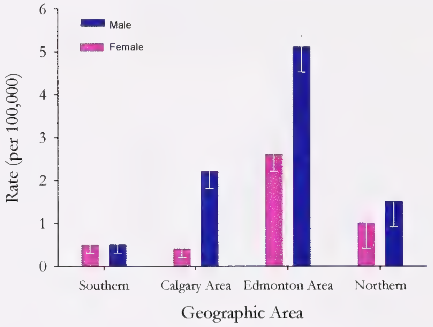
The syphilis outbreak is most concentrated in the Edmonton and Calgary areas but had spread to most health regions by 2006.

Age Groups ***continued*** (see Table 10.3.2)

- For females, the rate peaked at 20 to 24 years (4.2 per 100,000 females). The percentage of cases that were female decreased with age group from 25 to 59 years.
- The female rate was greater than the male rate for 15 to 24 year olds, while the male rate was greater in age groups 25 years and older.

Geographic Areas (see Tables 10.3.3 and 10.3.4)

Age-Adjusted Rate of Newly Reported Infectious Syphilis Cases by Sex and Geographic Area, Alberta, 1998 - 2006 Combined



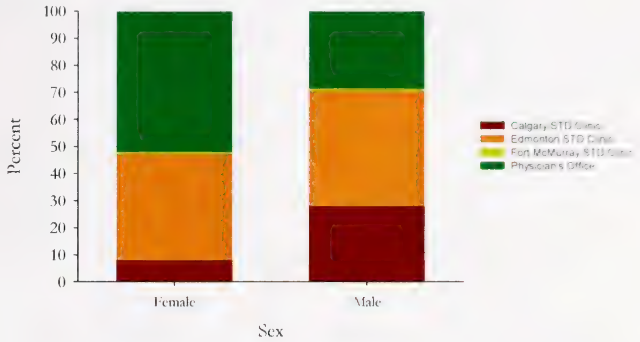
- The rates of newly diagnosed infectious syphilis cases were highest in the major metropolitan areas of Alberta, particularly the Edmonton area, for 1998 to 2006 combined. Sex differences in the rates were also more prominent in these areas.
- The rates for males and females were 5.1 and 2.6 (per 100,000 males and females, respectively) in the Edmonton area for 1998 to 2006 combined.
- Three year geographic area data show that rate increases occurred in all regions between 2004 and 2006. The rate of newly diagnosed infectious syphilis cases jumped earlier (2005) in the Edmonton area than in the Calgary area (2006).

10.3 Alberta Data

Female cases of infectious syphilis are most often diagnosed in physicians' offices, while male cases are split more evenly among treatment agencies.

Treatment Agencies (see Tables 10.3.5 and 10.3.6)

Percent of Newly Reported Infectious Syphilis Cases by Sex and Treatment Agency, Alberta, 1998 - 2006 Combined



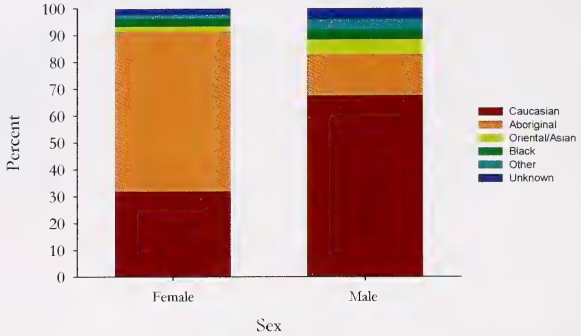
- There were sex differences in use of various treatment agencies for infectious syphilis diagnoses.
- Female newly diagnosed cases of infectious syphilis for 1998 to 2006 combined were most likely to be diagnosed in physicians' offices (52.1% of infections), followed by the Edmonton STD clinic (39.3%). Male cases were more evenly split between the Edmonton and Calgary STD clinics and physicians' offices (42.7%, 28.0%, and 28.8% of cases, respectively).
- Three year geographic area data for 2004 to 2006 indicated that an increasing number of cases were being diagnosed in physicians' offices.

10.3 Alberta Data

Ethnicity (see Tables 10.3.7 and 10.3.8)

Aboriginal cases make up a larger percentage of female cases than male cases. Caucasian cases were more common among males.

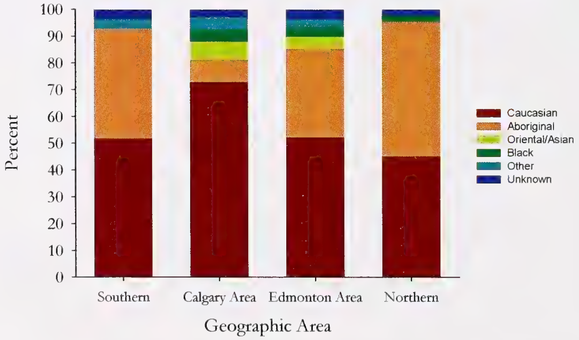
Percent of Newly Reported Infectious Syphilis Cases by Sex and Ethnicity, Alberta, 1998 - 2006 Combined



- Ethnicity data for newly diagnosed cases of infectious syphilis between 1998 and 2006 show that a large percentage of female cases occurred in Aboriginal individuals (59.5% of female cases). Caucasians made up 31.9% of female cases.
- For males, the percentage of Aboriginal cases was much lower (15.2% of male cases), while Caucasians made up a much larger proportion (67.5%).

Northern Alberta has the highest percentage of Aboriginal cases of newly diagnosed infectious syphilis. The highest percentage of Oriental/Asian and Black ethnicity cases was in the Calgary area.

Percent of Newly Reported Infectious Syphilis Cases by Geographic Area and Ethnicity, Alberta, 1998 - 2006 Combined



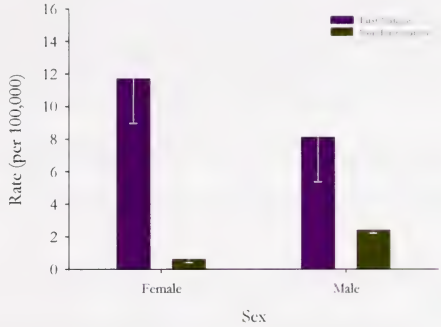
- Ethnicity data for the geographic areas show that while the percentage of cases that were Caucasian did not vary greatly between regions, the percentage of Aboriginal infectious syphilis cases was notably high in Northern and Southern Alberta (50.0% and 40.7% of cases in each region) and low in the Calgary area (8.3%). The Calgary area had the highest percentage of Oriental/Asian cases of all of the geographic areas.

10.3 Alberta Data

First Nations Status (see Table 10.3.9)

Newly diagnosed infectious syphilis rates are higher in First Nations than non-First Nations individuals, for both women and men.

Age-Adjusted Rate of Newly Reported Infectious Syphilis Cases by Sex and First Nations Status, Alberta, 1998 - 2006 Combined



- Between 1998 and 2006, rates of newly diagnosed cases of infectious syphilis were higher for First Nations than for non-First Nations individuals. First Nations rates were 8.1 and 11.7 (per 100,000 males and females, respectively). Non-First Nations rates were 2.4 and 0.6 (per 100,000 males and females, respectively).
- The female First Nations rate of newly diagnosed cases of infectious syphilis was more than 19 times that of the female non-First Nations rate.

Repeat Infections (see Table 10.3.10)

Repeat infectious syphilis infections within a year are rare.

- From 1998 to 2006, repeat newly diagnosed syphilis infections within a year were virtually non-existent. There were just 5 repeat infections during this time period in Alberta (all of which occurred in 2005 and 2006).

Congenital Syphilis (see Tables 10.3.11 and 10.3.12)

There were nine newly reported cases of congenital syphilis in 2005 and 2006.

- In Alberta between 1998 and 2006, there were 10 newly reported cases of congenital syphilis. Nine of these cases occurred in 2005 and 2006
- Eight of these ten congenital syphilis cases occurred in the Edmonton region.

Limitations and Methodology Notes

Case definitions for infectious and congenital syphilis appear in Appendix 15.5.

Ethnic groups are defined in the Glossary.

Repeat infections are newly diagnosed cases that occur within the same calendar year as a previously diagnosed infection.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 10.3.1. Newly Diagnosed Infectious Syphilis Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	0	0	3	8	5	7	18	55	67	163
% female cases[1]	0.0	0.0	18.8	36.4	29.4	19.4	24.0	37.7	30.7	30.3
Rate (per 100,000 females)	-	-	0.2	0.5	0.3	0.4	1.1	3.4	4.1	1.2
Age-adjusted rate	-	-	0.2	0.5	0.3	0.4	1.2	3.4	4.1	1.2
Standard error of adjusted rate (SE)	-	-	0.1	0.2	0.1	0.2	0.3	0.5	0.5	0.1
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	6	2	13	14	12	29	57	91	151	375
% male cases[1]	100.0	100.0	81.3	63.6	70.6	80.6	76.0	62.3	69.3	69.7
Rate (per 100,000 males)	0.4	0.1	0.9	0.9	0.8	1.9	3.6	5.7	9.2	2.7
Age-adjusted rate	0.4	0.1	0.9	0.9	0.8	1.9	3.5	5.8	9.3	2.7
Standard error of adjusted rate (SE)	0.2	0.1	0.3	0.3	0.2	0.4	0.5	0.6	0.8	0.1
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	6	2	16	22	17	36	75	146	218	538
Rate (per 100,000 population)	0.2	0.1	0.5	0.7	0.6	1.1	2.4	4.5	6.6	1.9
Age-adjusted rate	0.2	0.1	0.6	0.7	0.5	1.1	2.3	4.6	6.7	1.9
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.4	0.5	0.1

Sources: Alberta Health and Wellness. CDRS, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.2. Newly Diagnosed Infectious Syphilis Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	0	25	42	30	35	27	4
% female cases[1]	-	-	-	0.0	86.2	55.3	39.5	24.3	14.8	13.3
Rate (per 100,000 females)	-	-	-	-	2.5	4.2	3.0	1.6	0.7	0.2
Standard error (SE)	-	-	-	-	0.5	0.7	0.6	0.3	0.1	0.1
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	1	4	34	46	109	155	26
% male cases[1]	-	-	-	100.0	13.8	44.7	60.5	75.7	85.2	86.7
Rate (per 100,000 males)	-	-	-	0.1	0.4	3.4	4.6	5.1	4.0	1.5
Standard error (SE)	-	-	-	0.1	0.2	0.6	0.7	0.5	0.3	0.3
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	1	29	76	76	144	182	30
Rate (per 100,000 population)	-	-	-	0.0	1.4	3.8	3.8	3.3	2.4	0.8
Standard error (SE)	-	-	-	0.1	0.3	0.4	0.4	0.3	0.2	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.3. Newly Diagnosed Infectious Syphilis Cases and Rates by Sex and Region, Alberta, 1998 to 2006 Combined

Female	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	13	20	112	18	163
% female cases[2]	48.1	15.0	33.6	42.9	30.3
Rate (per 100,000 females)	0.4	0.4	2.6	1.1	1.2
Age-adjusted rate	0.5	0.4	2.6	1.0	1.2
Standard error of adjusted rate (SE)	0.1	0.1	0.2	0.3	0.1
Male	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	14	113	221	24	375
% male cases[2]	51.9	85.0	66.4	57.1	69.7
Rate (per 100,000 males)	0.5	2.3	5.1	1.4	2.7
Age-adjusted rate	0.5	2.2	5.1	1.5	2.7
Standard error of adjusted rate (SE)	0.1	0.2	0.3	0.3	0.1
All[3]	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	27	133	333	42	538
Rate (per 100,000 population)	0.5	1.3	3.8	1.3	1.9
Age-adjusted rate	0.5	1.3	3.8	1.3	1.9
Standard error of adjusted rate (SE)	0.1	0.1	0.2	0.2	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
2. Percent of all cases that were of a given gender, for a given region (column percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.4. Newly Diagnosed Infectious Syphilis Cases and Rates by Year and Region, Alberta, 2004 to 2006

2004	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	2	13	54	6	75
Rate (per 100,000 population)	0.3	1.1	5.4	1.6	2.4
Age-adjusted rate	0.3	1.1	5.3	1.7	2.3
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.3

2005	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	5	13	115	13	146
Rate (per 100,000 population)	0.8	1.1	11.4	3.4	4.5
Age-adjusted rate	1.0	1.1	11.3	3.7	4.6
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.4

2006	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	12	60	125	21	218
Rate (per 100,000 population)	1.8	5.0	12.2	5.4	6.6
Age-adjusted rate	1.9	4.8	12.2	5.2	6.7
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.1	0.5

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.5. Newly Diagnosed Infectious Syphilis Cases and Rates by Sex and Treatment Agency, Alberta, 1998 to 2006 Combined

Female	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	13	64	1	85	163
% of cases[2]	8.0	39.3	0.6	52.1	100.0
Male	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	105	160	2	108	375
% of cases[2]	28.0	42.7	0.5	28.8	100.0
All[3]	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	118	224	3	193	538
% of cases[2]	21.9	41.6	0.6	35.9	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.6. Newly Diagnosed Infectious Syphilis Cases and Percents by Year and Treatment Agency, Alberta, 2004 to 2006

2004	Calgary Clinic	Edmonton Clinic	Fort McMurray Clinic	Physician Office	Alberta[1]
Newly diagnosed cases	11	45	0	19	75
% of cases[2]	14.7	60.0	0.0	25.3	100.0
2005	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	10	78	2	56	146
% of cases[2]	6.8	53.4	1.4	38.4	100.0
2006	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	51	70	1	96	218
% of cases[2]	23.4	32.1	0.5	44.0	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.7. Newly Diagnosed Infectious Syphilis Cases and Percents by Ethnicity and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
Caucasian			
Cases	52	253	305
% of cases[2]	31.9	67.5	56.7
First Nations			
Cases	81	35	116
% of cases[2]	49.7	9.3	21.6
Metis			
Cases	15	22	37
% of cases[2]	9.2	5.9	6.9
Inuit			
Cases	1	0	1
% of cases[2]	0.6	0.0	0.2
Oriental			
Cases	1	10	11
% of cases[2]	0.6	2.7	2.0
Other, Asian			
Cases	2	11	13
% of cases[2]	1.2	2.9	2.4
Black			
Cases	5	14	19
% of cases[2]	3.1	3.7	3.5
Other, Specify			
Cases	2	14	16
% of cases[2]	1.2	3.7	3.0
Unknown			
Cases	4	16	20
% of cases[2]	2.5	4.3	3.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.
2. Percent of all cases of a given ethnicity for a given sex (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.8. Newly Diagnosed Infectious Syphilis Cases and Percents by Ethnicity and Region, Alberta, 1998 to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Caucasian					
Cases	**14**	**97**	**174**	**19**	**305**
% of cases[2]	**51.9**	**72.9**	**52.3**	**45.2**	**56.7**
First Nation					
Cases	**10**	**11**	**80**	**14**	**116**
% of cases[2]	**37.0**	**8.3**	**24.0**	**33.3**	**21.6**
Metis					
Cases	**1**	**0**	**29**	**7**	**37**
% of cases[2]	**3.7**	**0.0**	**8.7**	**16.7**	**6.9**
Inuit					
Cases	**0**	**0**	**1**	**0**	**1**
% of cases[2]	**0.0**	**0.0**	**0.3**	**0.0**	**0.2**
Oriental					
Cases	**0**	**5**	**6**	**0**	**11**
% of cases[2]	**0.0**	**3.8**	**1.8**	**0.0**	**2.0**
Other, Asian					
Cases	**0**	**4**	**9**	**0**	**13**
% of cases[2]	**0.0**	**3.0**	**2.7**	**0.0**	**2.4**
Black					
Cases	**0**	**6**	**12**	**1**	**19**
% of cases[2]	**0.0**	**4.5**	**3.6**	**2.4**	**3.5**
Other, Specify					
Cases	**1**	**6**	**9**	**0**	**16**
% of cases[2]	**3.7**	**4.5**	**2.7**	**0.0**	**3.0**
Unknown					
Cases	**1**	**4**	**13**	**1**	**20**
% of cases[2]	**3.7**	**3.0**	**3.9**	**2.4**	**3.7**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
2. Percent of all cases of a given ethnicity for a given region (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.9. Newly Diagnosed Infectious Syphilis Cases, Percents, Rates, and Rate Ratios by First Nations Status and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
First Nations			
Cases	80	44	124
% of cases[2]	49.1	12.4	23.9
Rate (per 100,000 First Nations)	12.4	6.8	9.6
Age-adjusted rate (per 100,000 First nations)	11.7	8.1	9.9
Standard error of adjusted rate (SE)	1.4	1.4	1.0
Non-First Nations			
Cases	83	311	394
% of cases[2]	50.9	87.6	76.1
Rate (per 100,000 non-First Nations)	0.6	2.4	1.5
Age-adjusted rate (per 100,000 non-First nations)	0.6	2.4	1.5
Standard error of adjusted rate (SE)	0.1	0.1	0.1
Rate Ratio[3]			
Crude	19.8	2.9	6.4
Age-adjusted	19.5	3.4	6.6

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given gender that were assigned to a given First Nations status, for a given year.
2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent). Excludes cases with unknown First Nations status.
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 10.3.10. Newly Diagnosed Infectious Syphilis Cases and Percents by Repeat Infection Frequency and Year, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	Alberta[1]
1 infection										
Cases	6	2	16	22	17	36	75	146	210	530
% of cases[2]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.1	99.3
2 infections										
Cases	0	0	0	0	0	0	0	0	4	4
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given repeated infection for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table10.3.11. Newly Diagnosed Congenital Syphilis Cases and Percents by Year, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly diagnosed cases	0	0	0	0	1	0	0	5	4	10
Rate (per 100,000 population)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Age-adjusted rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Standard error of adjusted rate (SE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction

Table 10.3.12. Newly Diagnosed Congenital Syphilis Cases and Rates by Region, Alberta, 1998 to 2006 Combined

Congenital	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	1	1	8	0	10
Rate (per 100,000 population)	0.0	0.0	0.1	0.0	0.0
Age-adjusted rate	0.0	0.0	0.1	0.0	0.0
Standard error of adjusted rate (SE)	0.0	0.0	0.0	0.0	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

11.

Non-Infectious Syphilis

11.1 Fundamentals

11.2 National and International Data

11.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

11.1 Fundamentals

Late latent (after one year) or tertiary syphilis is non-infectious.

Syphilis is caused by infection with *Treponema pallidum*. Non-infectious syphilis is defined here as late latent or tertiary syphilis. If untreated, about one third of infectious cases progress to tertiary syphilis. [51]

Syphilis may spread throughout the body if untreated, causing widespread damage.

In this late stage of syphilis infection, the *Treponema pallidum* bacteria can invade the brain, nerves, eyes, heart, blood vessels, liver, bones, or joints. Damage to these areas may not appear for many years. Symptoms may include difficulty coordinating muscles, paralysis, numbness, gradual blindness, and dementia. Death can result. [45, 51]

11.2 National and International Data

Worldwide estimates of non-infectious syphilis rates are unavailable. In the United States, the rate of newly reported cases of non-infectious syphilis was 6.0 (per 100,000 population) in 2006. [52]

Non-infectious syphilis rates began to increase in Canada in 2002.

Rates of newly reported cases of non-infectious syphilis in Canada declined from 3.74 (per 100,000 population) in 1990 (1,035 cases) to 1.30 in 1997 (391 cases), and remained stable between 1997 and 2001. Rates began to increase in 2002. By 2004, the rate of non-infectious syphilis in Canada was 2.15 (666 cases). [53]

Non-infectious cases of syphilis are being reported in younger age groups in recent years in Canada.

The Canadian rate increase in newly reported cases of non-infectious syphilis between 2002 and 2004 applies to all age groups. Historically, rates were highest in Canada in the 60^+ age group, but beginning in 2002, the rate for 30-39 year olds was higher than the 60^+ age group. Furthermore, in 2004, the rate for 25-29 year olds (3.54 per 100,000 population) exceeded that of 30 to 39 year olds (3.35) and 60^+ year olds (3.11). [53]

Newly reported male cases of non-infectious syphilis are more frequent than female cases in Canada.

Newly reported cases of non-infectious syphilis occurred approximately twice as often in males than in females in 2004. The recent increase in rates is much more pronounced in males. From 2001 to 2004, the rate increased 108% for males, from 1.38 to 2.87 (per 100,000 males), and 15% for females, from 1.25 to 1.44 (per 100,000 females). [53]

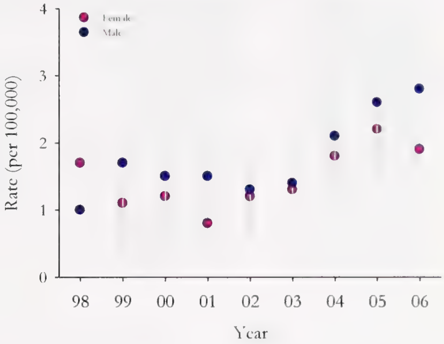
The recent increase in non-infectious syphilis rates occurred earlier in Canada than in Alberta, although the 2004 rates for Alberta (2.03 per 100,000 population) were similar to those for Canada (2.15). Between 1990 and 1995, Canadian and Albertan rates were either similar or somewhat lower in Alberta. From 1996 to 2000, Canadian and Albertan rates were similar. From 2001 to 2003, the Canadian rate exceeded the Albertan rate. [53]

11.3 Alberta Data

Rates of newly diagnosed cases of non-infectious syphilis do not follow a significant time trend.

Time Trends (see Table 11.3.1)

Age-Adjusted Rate of Newly Reported Non-Infectious Syphilis Cases by Sex, Alberta, 1998 - 2006

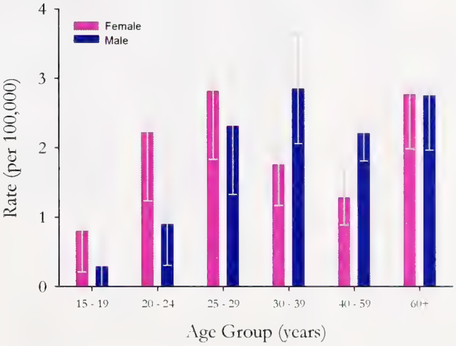


- The rate of newly diagnosed cases of non-infectious syphilis fluctuated between 1.0 and 2.4 in Alberta between 1998 and 2006. There is a recent non-significant trend toward increasing rates, more so for males than females.
- In 2006, there were 44 male and 32 female newly diagnosed cases of non-infectious syphilis.

For females, rates of newly diagnosed syphilis cases peak from 20 to 29 years. The highest rates for males are between 25 and 59.

Age Groups (see Table 11.3.2)

Rate of Newly Reported Non-Infectious Syphilis Cases by Sex and Age Group, Alberta, 1998 - 2006 Combined



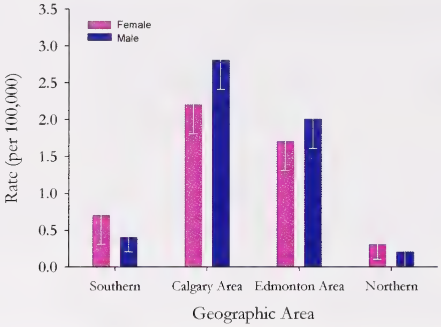
- For males, the rate of newly diagnosed cases of syphilis is highest in males over 25 years old, for 1998 to 2006 combined. For females, the rate was highest for 20 to 25 year olds and 60+ year olds.

11.3 Alberta Data

Non-infectious syphilis cases are concentrated in the Edmonton and Calgary areas.

Geographic Areas (see Tables 11.3.3 and 11.3.4)

Age-Adjusted Rate of Newly Reported Non-InfectiousSyphilis Cases by Sex and Geographic Area, Alberta, 1998 - 2006 Combined

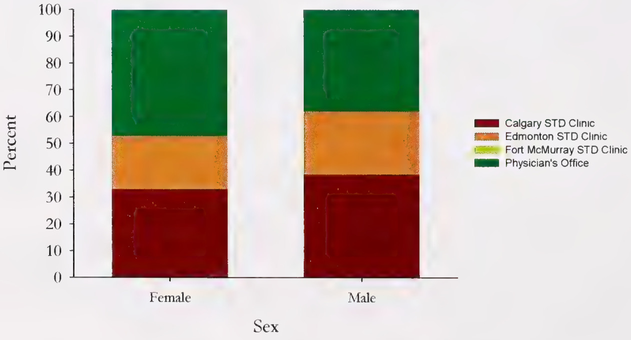


- The rates of newly diagnosed non-infectious syphilis infections were highest in the Calgary and Edmonton areas between 1998 and 2006.
- The rates for males were 2.8 and 2.0 (per 100,000 males in the Calgary and Edmonton areas, respectively). For females, the rates were 2.2 and 1.7 (per 100,000 females in the Calgary and Edmonton areas).
- Three year geographic area data show fluctuating rates over time in the geographic regions, though all regions had at least slightly higher rates in 2006 than in 2004.

Sex differences in treatment agency of diagnosis are not substantial for non-infectious syphilis.

Treatment Agencies (see Tables 11.3.5 and 11.3.6)

Percent of Newly Reported Non-Infectious Syphilis Cases by Sexand Treatment Agency, Alberta, 1998 - 2006 Combined

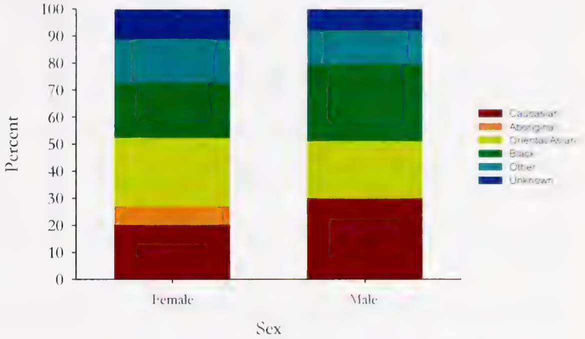


- There were minor sex differences in use of various treatment agencies for non-infectious syphilis diagnoses.
- As with infectious syphilis, increasing numbers of cases of non-infectious syphilis were diagnosed in doctors' offices during the time period between 2004 and 2006.

11.3 Alberta Data

Ethnicity (see Tables 11.3.7 and 11.3.8)

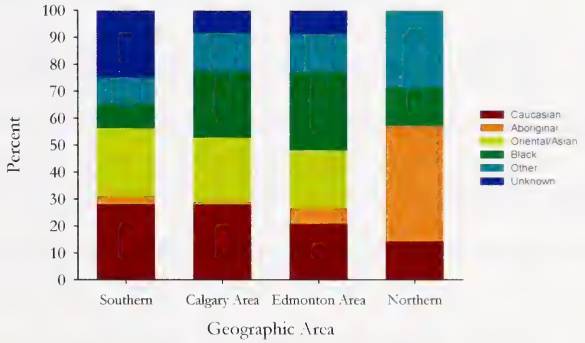
Percent of Newly Reported Non-Infectious Syphilis Cases by Sex and Ethnicity, Alberta, 1998 - 2006 Combined



- Sex differences in ethnicity data for newly diagnosed non-infectious syphilis cases show a larger proportion of Oriental/Asian and Aboriginal cases among females (25.1% and 6.9% of female cases) and a larger proportion of Black and Caucasian ethnicity cases among males (28.6% and 29.9% of male cases).

Female cases of newly diagnosed non-infectious syphilis were more likely than male cases to be Oriental/Asian or Aboriginal, while male cases were more likely to be of Black ethnicity or Caucasian.

Percent of Newly Reported Non-Infectious Syphilis Cases by Geographic Areaand Ethnicity, Alberta, 1998 - 2006 Combined



- The most striking regional variation in ethnicity distribution for newly diagnosed non-infectious syphilis cases in Alberta from 1998 to 2006 was the high proportion (42.9%) of Aboriginal cases in Northern Alberta. Black ethnicity cases were more common in the Calgary and Edmonton areas.

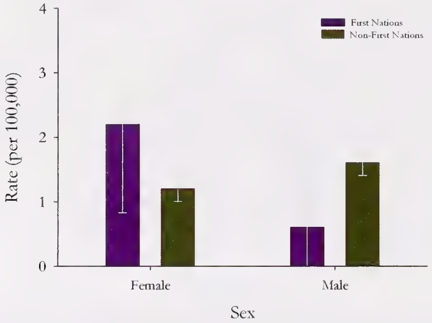
Aboriginal ethnicity cases of newly diagnosed non-infectious syphilis were most common in Northern Alberta.

11.3 Alberta Data

First Nations status did not play a large role in rates of newly diagnosed non-infectious syphilis.

First Nations Status (see Table 11.3.9)

Age-Adjusted Rate of Newly Reported Non-Infectious Syphilis Cases by Sex and First Nations Status, Alberta, 1998 - 2006 Combined



- Between 1998 and 2006, rates of newly diagnosed cases of non-infectious syphilis were higher for First Nations females than for non-First Nations females, but the difference was not statistically significant. For males, the non-First Nations was higher than the First Nations rate, again not significantly.
- First Nations rates were 0.6 and 2.2 (per 100,000 males and females, respectively). Non-First Nations rates were 1.6 and 1.2 (per 100,000 males and females, respectively).

Limitations and Methodology Notes

A case definition for non-infectious syphilis appears in Appendix 15.5.

Ethnic groups are defined in the Glossary.

Repeat infections are newly diagnosed cases that occur within the same calendar year as a previously diagnosed infection.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 11.3.1. Newly Diagnosed Non-Infectious Syphilis Cases and Rates by Sex and Year, Alberta, 1998 to 2006

Female	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	23	15	17	12	19	21	28	36	32	203
% female cases[1]	63.9	39.5	45.9	41.4	50.0	48.8	45.9	47.4	41.6	46.7
Rate (per 100,000 females)	1.6	1.0	1.1	0.8	1.2	1.3	1.8	2.2	1.9	1.5
Age-adjusted rate	1.7	1.1	1.2	0.8	1.2	1.3	1.8	2.2	1.9	1.5
Standard error of adjusted rate (SE)	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.1
Male	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	13	23	20	17	19	22	33	40	44	231
% male cases[1]	36.1	60.5	54.1	58.6	50.0	51.2	54.1	52.6	57.1	53.1
Rate (per 100,000 males)	0.9	1.6	1.3	1.1	1.2	1.4	2.1	2.5	2.7	1.7
Age-adjusted rate	1.0	1.7	1.5	1.2	1.3	1.4	2.1	2.6	2.8	1.8
Standard error of adjusted rate (SE)	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.1
All[2]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed cases	36	38	37	29	38	43	61	76	77	435
Rate (per 100,000 population)	1.3	1.3	1.2	1.0	1.2	1.4	1.9	2.4	2.3	1.6
Age-adjusted rate	1.3	1.4	1.4	1.0	1.3	1.4	1.9	2.0	2.4	1.6
Standard error of adjusted rate (SE)	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.1

Sources: Alberta Health and Wellness. CDRS, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.2. Newly Diagnosed Non-Infectious Syphilis Cases and Rates by Sex and Age Group, Alberta, 1998 to 2006 Combined

Female	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	0	8	22	28	38	49	58
% female cases[1]	-	-	-	-	72.7	71.0	53.8	38.4	36.3	54.2
Rate (per 100,000 females)	-	-	-	-	0.8	2.2	2.8	1.8	1.3	2.8
Standard error (SE)	-	-	-	-	0.3	0.5	0.5	0.3	0.2	0.4
Male	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	0	3	9	23	61	86	49
% male cases[1]	-	-	-	-	27.3	29.0	44.2	61.6	63.7	45.8
Rate (per 100,000 males)	-	-	-	-	0.3	0.9	2.3	2.8	2.2	2.7
Standard error (SE)	-	-	-	-	0.2	0.3	0.5	0.4	0.2	0.4
All[2]	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed cases	0	0	0	0	11	31	52	99	135	107
Rate (per 100,000 population)	-	-	-	-	0.5	1.6	2.6	2.3	1.7	2.8
Standard error (SE)	-	-	-	-	0.2	0.3	0.4	0.2	0.2	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
2. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.3. Newly Diagnosed Non-Infectious Syphilis Cases and Rates by Sex and Region, Alberta, 1998 to 2006 Combined

Female	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	20	105	73	4	203
% female cases[2]	62.5	44.7	46.2	57.1	46.7
Rate (per 100,000 females)	0.7	2.1	1.7	0.2	1.5
Age-adjusted rate	0.7	2.2	1.7	0.3	1.5
Standard error of adjusted rate (SE)	0.2	0.2	0.2	0.1	0.1
Male	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	12	130	84	3	231
% male cases[2]	37.5	55.3	53.2	42.9	53.1
Rate (per 100,000 males)	0.4	2.6	2.0	0.2	1.7
Age-adjusted rate	0.4	2.8	2.0	0.2	1.8
Standard error of adjusted rate (SE)	0.1	0.2	0.2	0.1	0.1
All[3]	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	32	235	158	7	435
Rate (per 100,000 population)	0.6	2.4	1.8	0.2	1.6
Age-adjusted rate	0.6	2.5	1.8	0.2	1.6
Standard error of adjusted rate (SE)	0.1	0.2	0.1	0.1	0.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
2. Percent of all cases that were of a given gender, for a given region (column percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.4. Newly Diagnosed Non-Infectious Syphilis Cases and Rates by Year and Region, Alberta, 2004 to 2006

2004	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Newly diagnosed cases	6	37	17	1	61
Rate (per 100,000 population)	0.9	3.2	1.7	0.3	1.9
Age-adjusted rate	0.9	3.2	1.7	0.3	1.9
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.3
2005	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	6	28	41	1	76
Rate (per 100,000 population)	0.9	2.4	4.1	0.3	2.4
Age-adjusted rate	0.9	2.5	4.1	0.2	2.4
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.3
2006	**Southern Alberta**	**Calgary Area**	**Edmonton Area**	**Northern Alberta**	**Alberta[1]**
Newly diagnosed cases	7	40	27	3	77
Rate (per 100,000 population)	1.0	3.3	2.6	0.8	2.3
Age-adjusted rate	1.1	3.3	2.6	0.8	2.4
Standard error of adjusted rate (SE)	0.1	0.1	0.1	0.2	0.3

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.5. Newly Diagnosed Non-Infectious Syphilis Cases and Rates by Sex and Treatment Agency, Alberta, 1998 to 2006 Combined

Female	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	67	40	0	96	203
% of cases[2]	33.0	19.7	0.0	47.3	100.0

Male	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	89	54	0	88	231
% of cases[2]	38.5	23.4	0.0	38.1	100.0

All[3]	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	156	95	0	184	435
% of cases[2]	35.9	21.8	0.0	42.3	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
3. Includes cases with sex missing.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.6. Newly Diagnosed Non-Infectious Syphilis Cases and Percents by Year and Treatment Agency, Alberta, 2004 to 2006

2004	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	33	12	0	16	61
% of cases[2]	54.1	19.7	0.0	26.2	100.0

2005	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	14	19	0	43	76
% of cases[2]	18.4	25.0	0.0	56.6	100.0

2006	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	17	14	0	46	77
% of cases[2]	22.1	18.2	0.0	59.7	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.7. Newly Diagnosed Non-Infectious Syphilis Cases and Percents by Ethnicity and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
Caucasian			
Cases	41	69	110
% of cases[2]	20.2	29.9	25.3
First Nations			
Cases	11	1	12
% of cases[2]	5.4	0.4	2.8
Metis			
Cases	3	0	3
% of cases[2]	1.5	0.0	0.7
Inuit			
Cases	0	0	0
% of cases[2]	0.0	0.0	0.0
Oriental			
Cases	25	22	47
% of cases[2]	12.3	9.5	10.8
Other, Asian			
Cases	26	26	52
% of cases[2]	12.8	11.3	12.0
Black			
Cases	42	66	109
% of cases[2]	20.7	28.6	25.1
Other, Specify			
Cases	32	28	60
% of cases[2]	15.8	12.1	13.8
Unknown			
Cases	23	19	42
% of cases[2]	11.3	8.2	9.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Includes cases with sex missing.
2. Percent of all cases of a given ethnicity for a given sex (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.8. Newly Diagnosed Non-Infectious Syphilis Cases and Percents by Ethnicity and Region, Alberta, 1998 to 2006 Combined

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Caucasian					
Cases	9	66	33	1	110
% of cases[2]	28.1	28.1	20.9	14.3	25.3
First Nation					
Cases	0	2	8	2	12
% of cases[2]	0.0	0.9	5.1	28.6	2.8
Metis					
Cases	1	0	1	1	3
% of cases[2]	3.1	0.0	0.6	14.3	0.7
Inuit					
Cases	0	0	0	0	0
% of cases[2]	0.0	0.0	0.0	0.0	0.0
Oriental					
Cases	2	25	19	0	47
% of cases[2]	6.3	10.6	12.0	0.0	10.8
Other, Asian					
Cases	6	31	15	0	52
% of cases[2]	18.8	13.2	9.5	0.0	12.0
Black					
Cases	3	58	46	1	109
% of cases[2]	9.4	24.7	29.1	14.3	25.1
Other, Specify					
Cases	3	33	22	2	60
% of cases[2]	9.4	14.0	13.9	28.6	13.8
Unknown					
Cases	8	20	14	0	42
% of cases[2]	25.0	8.5	8.9	0.0	9.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown region cases.
2. Percent of all cases of a given ethnicity for a given region (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 11.3.9. Newly Diagnosed Non-Infectious Syphilis Cases, Percents, Rates, and Rate Ratios by First Nations Status and Sex, Alberta, 1998 to 2006 Combined

	Female	Male	All[1]
First Nations			
Cases	13	3	16
% of cases[2]	7.7	1.5	4.3
Rate (per 100,000 First Nations)	2.0	0.5	1.2
Age-adjusted rate (per 100,000 First nations)	2.2	0.6	1.5
Standard error of adjusted rate (SE)	0.7	0.4	0.4
Non-First Nations			
Cases	155	198	353
% of cases[2]	92.3	98.5	95.7
Rate (per 100,000 non-First Nations)	1.2	1.5	1.3
Age-adjusted rate (per 100,000 non-First nations)	1.2	1.6	1.4
Standard error of adjusted rate (SE)	0.1	0.1	0.1
Rate Ratio[3]			
Crude	1.7	0.3	0.9
Age-adjusted	1.8	0.4	1.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given gender that were assigned to a given First Nations status, for a given year.
2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent). Excludes cases with unknown First Nations status.
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
Data include Alberta residents only.

12.

Mucopurulent Cervicitis and Non-gonococcal Urethritis

12.1 Fundamentals

12.2 National and International Data

12.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
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12.1 Fundamentals

Most MPC cases are caused by chlamydia or gonorrhea.

Cervicitis refers to inflammation of the cervix. Mucopurulent cervicitis (MPC) refers to a clinical syndrome of cervicitis which is often accompanied by pus and/or mucous and/or easily-induced bleeding of the cervix. The bacterium causing the infection is usually not known, but when it is known it is most often *C. trachomatis* or *N. gonorrhoeae* (chlamydia or gonorrhea infection). Women with PID may present with cervicitis. Women are more likely to transmit HIV to sexual partners in the presence of cervicitis. [54]

MPC can have serious consequences if left untreated.

MPC is associated with higher risk of poor pregnancy outcome, upper genital tract disease, and transmission of HIV. [55]

NGU is most often caused by chlamydia.

Urethritis refers to inflammation of the urethra. Non-gonococcal urethritis (NGU) is urethritis not caused by *Neisseria gonorrhoeae* (the bacterium that results in gonorrhea); it most often occurs in males. Chlamydial infection is a common cause of NGU (15 to 55% of cases). [39, 54]

Up to one in four NGU infections is not accompanied by symptoms.

NGU infections are asymptomatic up to 25% of the time. Symptoms, when present, may include discharge containing mucous and/or pus, painful urination, urethral itching, or inflammation of the opening of the urethra. Symptoms appear one to five weeks after infection. NGU is treatable with antibiotics. [39]

Among men with chlamydia, outcomes can consist of epididymitis (inflammation of the epididymis), inflammation of the prostate gland, or reactive arthritis. [39, 54]

MPC and NGU share risk factors with chlamydia (high-risk sexual activity).

NGU and MPC can be treated with antibiotics. Because of the high proportion of NGU and MPC cases involving chlamydia, risk factors for NGU and MPC are shared with chlamydia, including new or multiple sexual partners and history of sexually-transmitted infections.[39]

It should be noted that in order to be classified as MPC or NGU in Alberta, a case must not have a concurrent diagnosis or either chlamydia or gonorrhea (see case definitions in Appendix 15.5.

12.2 National and International Data

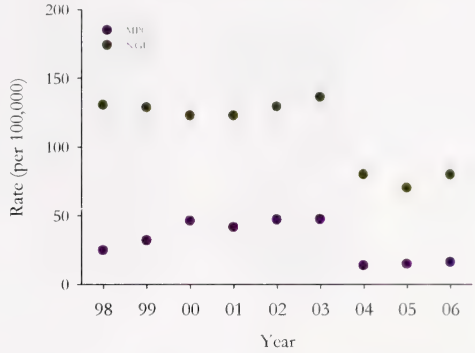
NGU and MPC are not reportable at the federal level in Canada. In fact, few jurisdictions worldwide require reporting of NGU and MPC. For this reason, reliable estimates of the incidence or prevalence of these infections outside of Alberta are not available. One study from the 1990s estimated that there were two million cases of NGU per year in the United States. While not precise, this estimate gives an idea of the widespread nature of NGU. [56]

12.3 Alberta Data

There were 273 newly diagnosed cases of MPC in 2006, and 1,321 newly diagnosed cases of NGU.

Time Trends (see Table 12.3.1)

Age-Adjusted Rate of Newly Reported MPC and NGU Cases by Sex, Alberta, 1998 - 2006



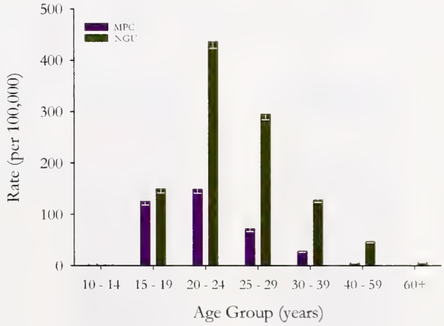
- Case definitions for MPC and NGU were modified in 2003. For this reason, comparisons cannot be made between rates up to 2003 and those after 2003.
- The rate of newly diagnosed MPC infections in Alberta varied from 13.5 in 2004 (per 100,000 females) to 16.0 in 2006. There were 273 newly diagnosed cases of MPC in 2006.
- The NGU rate was lower in 2005 than in 2004 and 2006. In 2006, there were 1,321 newly diagnosed cases of NGU, for a rate of 79.5 (per 100,000 males).

MPC rates are highest in 15 to 24 year olds.

NGU rates are highest in 20 to 29 year olds.

Age Groups (see Table 12.3.2)

Age-Adjusted Rate of Newly Reported MPC and NGU Cases by Age Group, Alberta, 1998 - 2006 Combined



- The rate of newly diagnosed cases of MPC cases in Alberta for 1998 to 2006 combined was highest in the 20 to 24 year age group (149.3 per 100,000 females). The rate was also high in the 15 to 19 year age group (125.4).
- Newly diagnosed cases of NGU had their highest rates in the 20 to 24 year age group (436.3 per 100,000 males) between 1998 and 2006. The rate for 25 to 29 year olds was high as well (295.2).

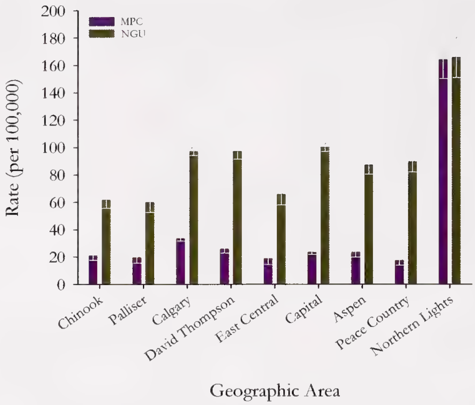
12.3 Alberta Data

Northern Lights region has the highest rates of newly diagnosed cases of MPC and NGU.

Recent trends show decreasing rates of MPC in Northern Lights.

Geographic Areas (see Tables 12.3.3 to 12.3.5)

Age-Adjusted Rate of Newly Reported MPC and NGU Cases by Geographic Area, Alberta, 1998 - 2006 Combined



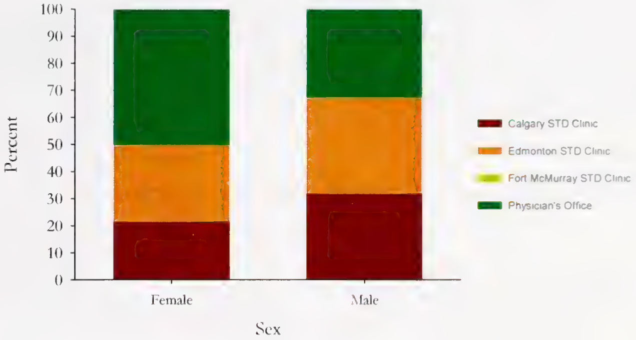
- Northern Lights region had a rate of newly diagnosed MPC cases that was much higher than all other RHAs. The rate of 163.5 (per 100,000 females) was almost five times the next highest rate. The lowest rates were in East Central (18.6), Peace Country (17.2), and Palliser (19.5) regions.
- For NGU, the rate of newly diagnosed cases was also highest in the Northern Lights region (165.4). The lowest rates were found in Palliser (59.8), Chinook (61.7), and East Central (65.7) regions.
- Three year trends for 2004 to 2006 showed that rates of MPC declined in 2006 in Northern Lights region, and were relatively stable in Calgary and Capital regions. The numbers of cases in other RHAs were not large enough for assessment of three year trends.
- Three year trends for the RHAs for 2004 to 2006 for NGU revealed no reliable rate changes.

12.3 Alberta Data

Sex differences in use of treatment agencies for MPC and NGU were not large.

Treatment Agencies (see Tables 12.3.6 and 12.3.7)

Percent of Newly Reported Syphilis Cases by Sex and Treatment Agency, Alberta, 1998 - 2006 Combined

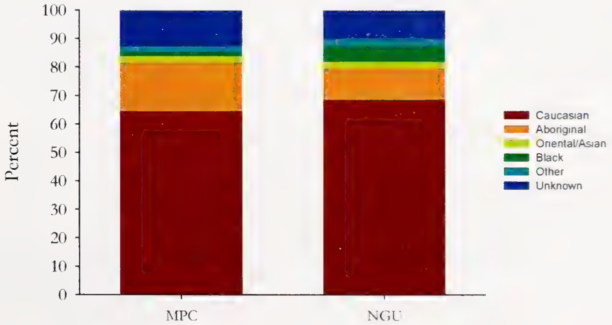


- Similar to other sexually transmitted infections, female cases (MPC) were more likely to be diagnosed in physicians' offices than male cases (NGU) for 1998 to 2006, although the sex difference was not large.
- The percentage of newly diagnosed cases of MPC that was diagnosed in physicians' offices increased from 2004 to 2006, while the percentage diagnosed at the Fort McMurray STD clinic declined.
- For NGU cases from 2004 to 2006, treatment agency percentages did not vary substantially with time.

MPC and NGU cases were predominantly Caucasian. Aboriginal ethnicity was more frequent among female cases than among male cases.

Ethnicity (see Tables 12.3.8 to 12.3.10)

Percent of Newly Reported MPC and NGU Cases by Ethnicity, Alberta, 1998 - 2006 Combined



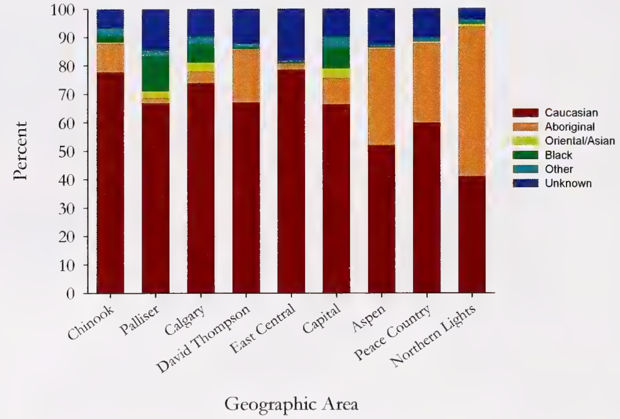
- Newly diagnosed MPC cases were predominantly Caucasian (64.5% of cases) between 1998 and 2006; 17.2% were Aboriginal.
- Newly diagnosed NGU cases were also predominantly Caucasian (68.6% of cases); 11.1% were Aboriginal and 5.5% were Black.

12.3 *Alberta Data*

Percentages of Caucasian cases of MPC and NGU were highest in East Central, Calgary, and Chinook regions. Northern Lights, Aspen, and Peace Country had the highest Aboriginal percentages.

Ethnicity continued (see Tables 12.3.8 to 12.3.10)

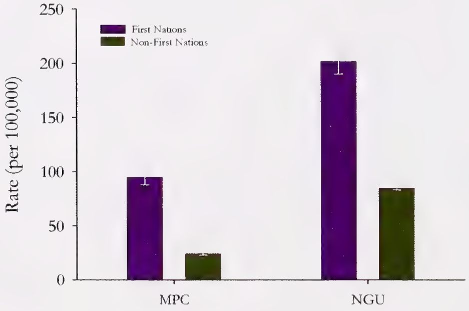
Percent of Newly Reported NGU Cases by Geographic Area and Ethnicity, Alberta, 1998 - 2006 Combined



- For both MPC and NGU, the Northern Lights, Aspen, and Peace Country regions had the highest percentages of Aboriginal cases, while East Central, Calgary, and Chinook regions had the highest percentages of Causcasian cases. Only NGU cases are shown in the above figure.

First Nations Status (see Table 12.3.11)

Age-Adjusted Rate of Newly Reported
MPC and NGU Cases by First Nations Status
Alberta, 1998 - 2006 Combined



- Over the period 1998 to 2006, the rate of newly diagnosed cases of MPC in First Nations women was 95.0 (per 100,000 females), compared with 23.9 in non-First Nations women. This is a rate ratio of 4.0. Almost one in five MPC infections occurred in First Nations women during this time period.
- For NGU, the First Nations rate was 201.4 (per 100,000 males), and the non-First Nations rate was 84.6, for a rate ratio of 2.4.

First Nations rates of newly diagnosed cases of MPC were 4 times higher in First Nations women than in non-First Nations women.

NGU rates were 2.4 times higher in First Nations men than in non-First Nations men.

12.3 Alberta Data

Repeat Infections (see Table 12.3.12)

- About 2% of newly diagnosed MPC infections were repeat infections within a year during 1998 to 2006 (84 cases over the time period).
- About 3% of newly diagnosed NGU infections were repeat infections within a year during 1998 to 2006 (475 cases over the time period).

Limitations and Methodology Notes

Case definitions for MPC and NGU appear in Appendix 15.5. Case definitions for MPC and NGU were modified in 2003. This resulted in a large reduction in the number of newly diagnosed cases of both infections. For this reason, comparisons cannot be made between rates up to 2003 and after 2003.

Although NGU can occur in females, only a few female cases are reported in Alberta. For this reason, NGU analyses were restricted to males only.

MPC occurs by definition in women only.

Ethnic groups are defined in the Glossary.

Repeat infections are newly diagnosed cases that occur within the same calendar year as a previously diagnosed infection.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects.

Table 12.3.1. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Rates by Year, Alberta, 1998 to 2006

MPC	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly diagnosed cases	360	482	692	642	744	749	217	239	273	4,398
Rate (per 100,000 females)	25.2	32.9	46.6	42.4	48.2	47.8	13.6	14.8	16.5	31.7
Age-adjusted rate	24.6	31.8	46.0	41.4	46.9	47.1	13.5	14.6	16.0	31.1
Standard error of adjusted rate (SE)	1.3	1.5	1.8	1.6	1.7	1.7	0.9	1.0	1.0	0.5
NGU	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed male cases	1,886	1,920	1,844	1,857	2,022	2,164	1,279	1,133	1,321	15,426
Rate (per 100,000 males)	132.5	131.5	124.4	123.0	131.1	138.2	80.5	70.5	80.3	111.6
Age-adjusted rate	130.4	128.6	122.6	121.1	129.1	136.1	79.7	70.0	79.5	110.0
Standard error of adjusted rate (SE)	3.0	3.0	2.9	2.8	2.9	3.0	2.2	2.1	2.2	0.9

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.2. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Rates by Age Group, Alberta, 1998 to 2006 Combined

MPC	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Newly diagnosed cases	1	0	0	28	1,254	1,481	718	612	221	1
Rate (per 100,000 females)	-	-	-	2.8	125.4	149.3	72.1	28.3	5.8	0.0
Standard error (SE)	0.6	.	.	0.5	3.5	3.9	2.7	1.1	0.4	0.1
NGU	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 39**	**40 - 59**	**60+**
Newly diagnosed male cases	3	0	1	17	1,567	4,392	2,942	2,748	1,836	119
Rate (per 100,000 males)	1.7	-	0.1	1.6	149.4	436.3	295.2	128.1	47.0	6.7
Standard error (SE)	1.0	.	0.1	0.4	3.8	6.6	5.4	2.4	1.1	0.6

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases that were of a given gender, for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.3. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Rate by RHA, Alberta, 1998 to 2006 Combined

MPC	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	148	85	1,701	336	82	1,029	181	108	573	4,398
Rate (per 100,000 females)	21.4	19.6	34.3	26.4	16.6	23.5	23.4	18.9	197.6	31.7
Age-adjusted rate	20.9	19.5	33.3	25.7	18.6	23.2	23.3	17.2	163.5	31.1
Standard error of adjusted rate (SE)	1.7	2.1	0.8	1.4	2.1	0.7	1.8	1.7	6.9	0.5
NGU	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[1]**
Newly diagnosed male cases	424	265	4,968	1,255	289	4,358	658	558	549	15,426
Rate (per 100,000 males)	62.7	60.5	100.6	98.8	59.3	101.3	82.3	93.2	175.2	111.6
Age-adjusted rate	61.7	59.8	96.9	96.5	65.7	99.9	86.9	89.3	165.4	110.0
Standard error of adjusted rate (SE)	3.1	3.7	1.4	2.8	3.9	1.5	3.4	3.8	7.5	0.9

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.4. Newly Diagnosed Mucopurulent Cervicitis (MPC) Cases and Rates by Year and RHA, Alberta, 2004 to 2006

2004	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	2	2	76	14	3	60	5	1	53	217
Rate (per 100,000 females)	2.6	4.0	13.2	9.6	5.4	12.0	5.8	1.5	154.1	13.6
Age-adjusted rate	2.3	3.7	13.0	9.1	7.6	12.0	6.5	1.5	123.3	13.5
Standard error of adjusted rate (SE)	2.0	3.2	1.5	2.6	4.7	1.6	3.1	2.0	17.3	0.9
2005	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	4	7	92	16	1	61	9	4	43	239
Rate (per 100,000 females)	5.1	14.0	15.6	10.9	1.8	12.0	10.4	6.1	121.9	14.8
Age-adjusted rate	4.6	14.9	15.4	9.8	2.4	12.2	9.9	5.4	99.6	14.6
Standard error of adjusted rate (SE)	2.6	5.9	1.6	2.6	3.0	1.6	3.4	3.0	15.7	1.0
2006	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly diagnosed cases	19	6	98	27	6	87	6	10	14	273
Rate (per 100,000 females)	24.0	11.8	16.1	18.0	10.7	16.8	6.9	14.7	38.9	16.5
Age-adjusted rate	23.9	12.5	15.6	17.1	10.3	16.2	6.9	13.7	30.8	16.0
Standard error of adjusted rate (SE)	5.6	5.4	1.6	3.4	4.6	1.8	3.0	4.5	8.9	1.0

Sources: Alberta Health and Wellness. CDRS

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.5. Newly Diagnosed Male Non-gonococcal Urethritis (NGU) and Rate by Year and RHA, Alberta, 2004 to 2006

2004	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly reported cases	21	15	410	88	18	598	44	41	37	1,279
Rate (per 100,000 population)	27.5	29.8	71.5	60.7	32.8	121.2	49.2	60.2	98.8	80.5
Age-adjusted rate	13.7	15.5	34.7	30.6	18.7	59.4	27.2	30.7	49.3	40.1
Standard error of adjusted rate (SE)	3.1	4.1	1.7	3.3	4.5	2.5	4.2	4.8	8.9	1.1
2005	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly reported cases	19	29	403	81	19	479	45	21	32	1,133
Rate (per 100,000 population)	24.8	57.0	69.1	55.2	34.6	96.2	50.2	30.4	83.3	70.5
Age-adjusted rate	11.8	31.0	33.8	27.6	19.3	46.9	27.0	15.5	39.4	35.1
Standard error of adjusted rate (SE)	2.8	5.9	1.7	3.1	4.5	2.2	4.1	3.5	7.2	1.1
2006	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Newly reported cases	33	21	500	98	13	529	32	49	28	1,321
Rate (per 100,000 population)	42.7	40.8	83.3	65.3	23.5	104.0	35.6	68.9	70.9	80.3
Age-adjusted rate	21.2	22.0	40.3	33.4	12.4	50.8	18.5	32.1	33.8	39.7
Standard error of adjusted rate (SE)	3.8	4.9	1.8	3.4	3.5	2.2	3.3	4.7	6.6	1.1

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.6. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Rate by Treatment Agency, Alberta, 1998 to 2006 Combined

MPC	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	630	582	489	2,697	4,398
% of cases[2]	14.3	13.2	11.1	61.3	100.0
NGU	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed cases	2,396	3,055	265	8,180	15,426
% of cases[2]	15.5	19.8	1.7	53.0	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.7. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Percents by Year and Treatment Agency, Alberta, 2004 to 2006

2004	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed MPC cases	14	36	51	116	217
% of MPC cases[2]	6.5	16.6	23.5	53.5	100.0
Newly diagnosed male NGU cases	220	490	14	555	1,279
% of male NGU cases[2]	17.2	38.3	1.1	43.4	100.0
2005	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed MPC cases	5	35	39	160	239
% of MPC cases[2]	2.1	14.6	16.3	66.9	100.0
Newly diagnosed male NGU cases	218	346	12	557	1,133
% of male NGU cases[2]	19.2	30.5	1.1	49.2	100.0
2006	**Calgary Clinic**	**Edmonton Clinic**	**Fort McMurray Clinic**	**Physician Office**	**Alberta[1]**
Newly diagnosed MPC cases	7	49	7	210	273
% of MPC cases[2]	2.6	17.9	2.6	76.9	100.0
Newly diagnosed male NGU cases	327	387	8	599	1,321
% of male NGU cases[2]	24.8	29.3	0.6	45.3	100.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown treatment agency cases.
2. Percent of all cases for a given treatment agency, within a given year (row percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.8. Newly Diagnosed Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Percents by Ethnicity, Alberta, 1998 to 2006 Combined

	MPC	NGU
Caucasian		
Cases	**2,837**	**10,576**
% of cases[1]	**64.5**	**68.6**
First Nations		
Cases	**635**	**1,494**
% of cases[1]	**14.4**	**9.7**
Metis		
Cases	**120**	**213**
% of cases[1]	**2.7**	**1.4**
Inuit		
Cases	**1**	**0**
% of cases[1]	**0.0**	**0.0**
Oriental		
Cases	**86**	**260**
% of cases[1]	**2.0**	**1.7**
Other, Asian		
Cases	**9**	**93**
% of cases[1]	**0.2**	**0.6**
Black		
Cases	**65**	**853**
% of cases[1]	**1.5**	**5.5**
Other, Specify		
Cases	**83**	**383**
% of cases[1]	**1.9**	**2.5**
Unknown		
Cases	**562**	**1,554**
% of cases[1]	**12.8**	**10.1**

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given ethnicity for a given infection (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.9. Newly Diagnosed Mucopurulent Cervicitis (MPC) Cases and Percents by Ethnicity and RHA, Alberta, 1998 to 2006 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Caucasian										
Cases	115	56	1,218	222	67	600	96	64	314	2,837
% of cases[2]	77.7	65.9	71.6	66.1	81.7	58.3	53.0	59.3	54.8	64.5
First Nation										
Cases	14	0	99	58	5	170	65	30	168	635
% of cases[2]	9.5	0.0	5.8	17.3	6.1	16.5	35.9	27.8	29.3	14.4
Metis										
Cases	0	0	3	0	1	39	5	2	66	120
% of cases[2]	0.0	0.0	0.2	0.0	1.2	3.8	2.8	1.9	11.5	2.7
Inuit										
Cases	0	0	0	1	0	0	0	0	0	1
% of cases[2]	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Oriental										
Cases	4	0	50	0	0	26	0	1	2	86
% of cases[2]	2.7	0.0	2.9	0.0	0.0	2.5	0.0	0.9	0.3	2.0
Other, Asian										
Cases	0	1	3	0	0	5	0	0	0	9
% of cases[2]	0.0	1.2	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.2
Black										
Cases	2	1	36	0	0	20	0	1	4	65
% of cases[2]	1.4	1.2	2.1	0.0	0.0	1.9	0.0	0.9	0.7	1.5
Other, Specify										
Cases	1	1	35	3	0	39	0	2	2	83
% of cases[2]	0.7	1.2	2.1	0.9	0.0	3.8	0.0	1.9	0.3	1.9
Unknown										
Cases	12	26	257	52	9	130	15	8	17	562
% of cases[2]	8.1	30.6	15.1	15.5	11.0	12.6	8.3	7.4	3.0	12.8

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given ethnicity for a given RHA (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.10. Newly Diagnosed Male Non-gonococcal Urethritis (NGU) Cases and Percents by Ethnicity and RHA, Alberta, 1998 to 2006 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Caucasian										
Cases	330	178	3,676	844	227	2,890	342	334	225	11,089
% of cases[2]	77.8	66.9	73.9	67.1	78.5	66.3	52.0	59.9	41.0	68.8
First Nation										
Cases	43	4	202	226	4	300	201	140	262	1,589
% of cases[2]	10.1	1.5	4.1	18.0	1.4	6.9	30.5	25.1	47.7	9.9
Metis										
Cases	0	1	7	7	2	112	22	16	27	234
% of cases[2]	0.0	0.4	0.1	0.6	0.7	2.6	3.3	2.9	4.9	1.5
Inuit										
Cases	0	0	0	0	0	0	0	0	0	0
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oriental										
Cases	1	3	128	1	0	93	2	2	2	281
% of cases[2]	0.2	1.1	2.6	0.1	0.0	2.1	0.3	0.4	0.4	1.7
Other, Asian										
Cases	0	3	19	0	0	46	0	0	2	103
% of cases[2]	0.0	1.1	0.4	0.0	0.0	1.1	0.0	0.0	0.4	0.6
Black										
Cases	11	33	325	11	2	331	2	0	2	862
% of cases[2]	2.6	12.4	6.5	0.9	0.7	7.6	0.3	0.0	0.4	5.3
Other, Specify										
Cases	10	5	128	14	1	154	4	8	6	399
% of cases[2]	2.4	1.9	2.6	1.1	0.3	3.5	0.6	1.4	1.1	2.5
Unknown										
Cases	29	39	487	155	53	435	85	58	23	1,559
% of cases[2]	6.8	14.7	9.8	12.3	18.3	10.0	12.9	10.4	4.2	9.7

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.

2. Percent of all cases of a given ethnicity for a given RHA (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.11. Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases, Percents, Rates, and Rate Ratios by First Nations Status, Alberta, 1998 to 2006 Combined

	MPC	NGU
First Nations		
Cases	688	1,376
% of cases[2]	17.8	10.9
Rate (per 100,000 First Nations)	107.0	212.5
Age-adjusted rate (per 100,000 First nations)	95.0	201.4
Standard error of adjusted rate (SE)	3.7	5.8
Non-First Nations		
Cases	3,188	11,233
% of cases[2]	82.2	89.1
Rate (per 100,000 non-First Nations)	24.1	85.2
Age-adjusted rate (per 100,000 non-First nations)	23.9	84.6
Standard error of adjusted rate (SE)	0.4	0.8
Rate Ratio[3]		
Crude	4.4	2.5
Age-adjusted	4.0	2.4

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Percent of all cases of a given gender that were assigned to a given First Nations status, for a given year.
2. Percent of all cases of a given First Nations status for a given gender, in 1998-2006 (column percent). Excludes cases with unknown First Nations status.
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 12.3.12. Mucopurulent Cervicitis (MPC) and Male Non-Gonococcal Urethritis (NGU) Cases and Percents by Repeat Infection Frequency and Year, Alberta, 1998 to 2006

MPC	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
1 infection										
Cases	352	476	657	607	704	718	213	233	267	4,227
% of cases[2]	98.9	99.4	97.5	97.3	97.2	98.0	99.1	98.7	98.9	98.1
2 infections										
Cases	4	3	16	16	20	14	2	3	3	81
% of cases[2]	1.1	0.6	2.4	2.6	2.8	1.9	0.9	1.3	1.1	1.9
3 infections										
Cases	0	0	1	1	0	1	0	0	0	3
% of cases[2]	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.1
NGU	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
1 infection										
Cases	2,244	2,161	1,718	1,725	1,881	1,997	1,147	1,019	1,201	15,093
% of cases[2]	99.2	98.9	96.6	96.4	96.6	96.4	95.0	95.1	95.7	96.9
2 infections										
Cases	15	22	57	59	57	62	52	47	46	417
% of cases[2]	0.7	1.0	3.2	3.3	2.9	3.0	4.3	4.4	3.7	2.7
3 infections										
Cases	1	2	3	5	9	10	8	5	5	48
% of cases[2]	0.0	0.1	0.2	0.3	0.5	0.5	0.7	0.5	0.4	0.3
4 infections										
Cases	0	0	1	0	0	2	1	0	2	6
% of cases[2]	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.0
5 infections										
Cases	1	0	0	0	0	0	0	1	1	3
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
6 infections										
Cases	0	0	0	0	0	1	0	0	0	1
% of cases[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Alberta total contains unknown RHA cases.
2. Percent of all cases of a given repeated infection for a given year (column percent).
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

13.

Pelvic Inflammatory Disease

13.1 Fundamentals

13.2 National and International Data

13.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

Alberta

13.1 Fundamentals

PID is an infection of the upper female reproductive tract.

Pelvic inflammatory disease (PID) occurs when an infection in the female genital tract (vagina and endocervix) spreads to the upper reproductive tract (uterus, fallopian tubes, ovaries). Most commonly, the lining of the uterus or the fallopian tubes are infected. [57]

PID most often occurs without symptoms. Diagnosis requires laparoscopy.

PID can be asymptomatic or symptomatic. Asymptomatic PID is much more common than symptomatic PID. When symptoms occur, they include lower abdominal pain, painful urination, frequent urination, purulent discharge, pain during sex, or fever. Diagnosis is difficult because symptomatic infections vary widely in their manifestations, and many infections are asymptomatic. Laparoscopy (surgery) is the only way to establish a definite diagnosis, but surgery is not practical as a routine diagnostic procedure. [57]

PID can result in ectopic pregnancy, infertility, and other serious long-term consequences.

PID can result in long-term, severe consequences, including ectopic pregnancy, infertility, recurring infections, chronic abdominal pain, or abscesses in the fallopian tubes or ovaries. Infertility occurs in 15% of women after just one episode of PID. [57, 58]

Young women are at greatest risk of conracting PID. Gonorrhea and chlamydia result in the vast majority of PID cases.

Risk factors for PID include age and sexual activity level (sexually active adolescents are at greatest risk), use of an intrauterine device (IUD), past history of PID, and vaginal douching. Barrier methods of contraception decrease the risk of developing PID. Approximately 75% to 85% of PID cases are caused by gonorrhea or chlamydia infections that spread from the genital tract. This means that risk factors for PID are shared with those for gonorrhea and chlamydia. PID can develop as soon as five days after a chlamydia infection occurs. [43,57, 58]

The best prevention for PID is prevention and prompt treatment of genital tract infections.

13.2 National and International Data

The worldwide morbidity associated with PID is said to be far greater than all other STIs put together.

Infertility is a common outcome of PID.

Hospitalizations alone for PID are in the tens of thousands each year in Canada.

Worldwide estimates of the incidence of PID are not available. However, there were 92 million new cases of chlamydia and 62 million new cases of gonorrhea worldwide in 1999 alone. [41] Because untreated chlamydia and gonorrhea infections are the primary cause of PID, it is clear that PID is a global problem on a large scale. Economic and social costs are immense. In 1993, the World Bank estimated that PID caused 94% of all sexually transmitted infection-related morbidity. This includes HIV-associated morbidity. [43]

In the United States, it is estimated that more than 1 million women experience a new case of PID each year, and that 100,000 women become infertile each year from PID. Furthermore, more than 150 women die in the United States each year from PID complications.[59]

Because PID is not a reportable disease, and because diagnosis is difficult and cases often go unnoticed, estimates of the incidence of PID in Canada are very difficult to obtain.

One type of data that is available on incidence of PID in Canada is hospitalizations for PID. This is clearly an underestimate of PID cases, because most cases do not result in hospitalization. Furthermore, with the availability of improved oral antibiotics and the ability to administer antibiotics on an outpatient basis, the number of PID cases requiring hospitalization has declined over time. Nevertheless, in 2000/01, there were 14,019 hospitalizations for PID across Canada. The rate of hospitalizations was highest for 30 to 39 year olds, at 287.3 (per 100,000 women). [43]

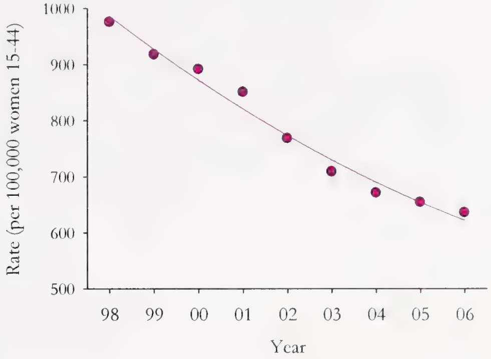
Research indicates that as many as one in ten North American women experiences an episode of PID in her lifetime. [57]

13.3 *Alberta Data*

Diagnosed PID cases in Alberta are decreasing. Nevertheless, there were almost 50,000 cases in Alberta between 1998 and 2006.

Time Trends (see Table 13.3.1)

Age-Adjusted Rate of PID Cases, Alberta, 1998 - 2006

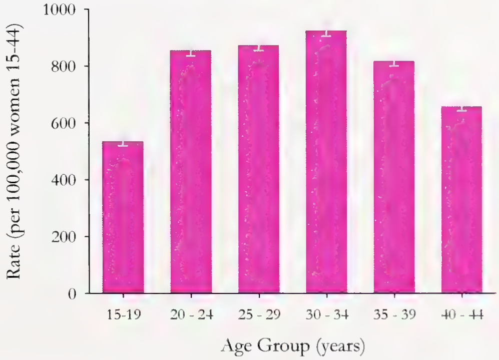


- The rate of diagnosed PID cases (combining all care settings: hospital admissions, ambulatory care visits, and physician's office visits) decreased steadily from 1998 to 2006.
- In 2006, there were 4,614 cases of PID diagnosed in Alberta, for a rate of 636.0 (per 100,000 women 15-44 years old).
- Rates declined during this time period for all care settings.

PID rates are highest for women 20 to 39 years old, particularly for 30 to 34 year olds.

Age Groups (see Table 13.3.2)

Age-Adjusted Rate of PID Cases by Age Group, Alberta, 1998 - 2006 Combined



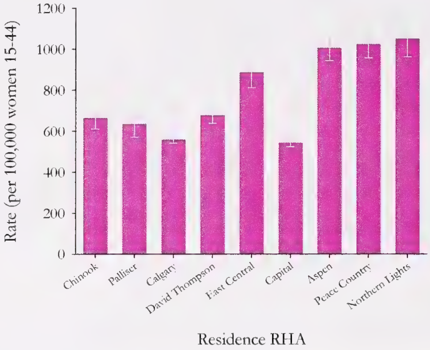
- Alberta PID cases (for all care settings combined) occurred most often in women 30 to 34 years of age between 1998 and 2006.
- Rates of PID were lowest in women 15 to 19 years of age and 40 to 44 years of age.

13.3 Alberta Data

Northern RHAs and East Central RHA had the highest PID rates in Alberta between 2004 and 2006. The lowest rates were in the two major metropolitan areas.

Geographic Areas (see Tables 13.3.3 and 13.3.4)

Age-Adjusted Rate of PID Cases by Sex and RHA, Alberta, 1998 - 2006 Combined

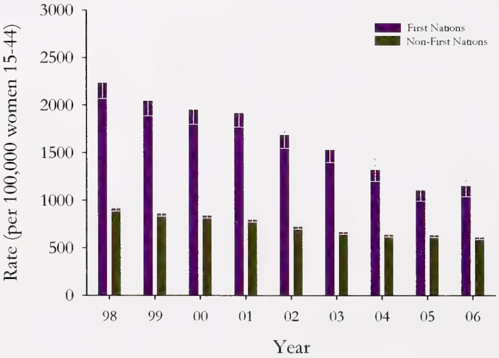


- The rates of PID (for all care settings combined) were highest in northern Alberta (Aspen, Peace Country, and Northern Lights RHAs) and East Central RHA for 2004 to 2006 combined, ranging from 884.2 to 1047.5 (per 100,000 women 15-44).
- Lowest PID rates were found in Capital and Calgary regions (540.7 and 557.0 per 100,000 women 15-44, respectively).
- Changes over the three-year period from 2004 to 2006 were variable across RHAs, but that the most notable decrease occurred from 2004 to 2005 in David Thompson RHA.

PID rates are substantially higher in First Nations women than in non-First Nations women, although First Nations rates have declined more rapidly over time.

First Nations Status (see Table 13.3.5)

Age-Adjusted Rate of PID Cases by First Nations Status, 1998 - 2006



- While PID rates (for all care settings combined) were highest for First Nations women than for non-First Nations women between 1998 and 2006, decreases were greater for First Nations women.

- In 2006, the PID rate for First Nations women was 1,147.2 (446 cases), compared with 607.2 (4,168 cases) for non-First Nations women. The rate ratio (First Nations to non-First Nations) for 2006 was 1.9.

13.3 *Alberta Data*

Limitations and Methodology Notes

A case definition for PID appears in Appendix 15.5.

PID occurs by definition in women only. Analyses were limited to women aged 15 to 44 only.

All rates reported in text and figures are age-adjusted (see Methodology section), with the exception of age group effects. For PID, the reference group for age adjustment was limited to women 15 to 44 years of age.

Table 13.3.1. Pelvic Inflammatory Disease (PID) Cases, Visits and Rates among Women 15-44 Years by Health Care Setting and Year, Alberta, 1998 to 2006

Hospital Admission	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Number of women with PID[1]	1,745	1,594	1,600	1,564	1,356	1,214	1,029	897	845	11,272
Number of hospital admissions	1,839	1,662	1,675	1,626	1,399	1,253	1,075	931	878	12,338
Rate (per 100,000 women 15-44)	258.4	231.8	231.0	223.4	191.0	170.1	143.5	124.5	115.2	177.5
Age-adjusted rate[2]	260.2	233.3	232.3	226.1	193.4	172.7	146.1	128.2	118.5	180.1
Standard error of adjusted rate (SE)	6.23	5.85	5.82	5.74	5.27	4.98	4.58	4.31	4.10	1.70
Ambulatory Care (Emergency) Visit	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Number of women with PID[1]	2,852	2,856	2,862	2,694	2,415	2,276	2,259	2,059	2,101	20,879
Number of visits	3,414	3,479	3,470	3,308	2,903	2,794	2,827	2,577	2,576	27,348
Rate (per 100,000 women 15-44)	422.3	415.3	413.3	384.9	340.1	318.8	315.1	285.7	286.5	328.8
Age-adjusted rate[2]	426.4	422.6	419.2	392.7	346.2	322.8	320.5	290.7	289.4	333.5
Standard error of adjusted rate (SE)	7.98	7.91	7.85	7.58	7.07	6.80	6.78	6.45	6.35	2.31
Physician Office Visit	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Number of women with PID[1]	3,180	2,983	2,955	2,836	2,708	2,517	2,298	2,496	2,593	22,810
Number of visits	4,304	3,993	3,857	3,643	3,418	3,181	2,906	3,134	3,298	31,734
Rate (per 100,000 women 15-44)	470.9	433.8	426.7	405.1	381.4	352.6	320.5	346.3	353.6	359.2
Age-adjusted rate[2]	473.9	437.9	430.7	410.0	385.8	353.6	321.5	348.7	352.8	361.1
Standard error of adjusted rate (SE)	8.40	8.02	7.93	7.72	7.44	7.08	6.74	7.02	6.97	2.40
All care settings combined	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Number of PID cases (episodes)[3]	6,535	6,231	6,104	5,863	5,372	5,002	4,750	4,637	4,614	49,108
Rate (per 100,000 women 15-44)	967.7	906.1	881.4	837.6	756.5	700.7	662.5	643.3	629.3	773.3
Age-adjusted rate[2]	975.7	917.7	891.4	850.6	768.1	708.7	671.1	654.2	636.0	782.9
Standard error of adjusted rate (SE)	12.03	11.60	11.40	11.11	10.49	10.05	9.77	9.65	9.40	3.53

Source: 1. Alberta Health and Wellness. BIE. Inpatient database, August 2007 release.
2. Alberta Health and Wellness. BIE. Ambulatory Care Database, November 2007 release.
3. Alberta Health and Wellness. BIE. Physician Claims Database, August 2007 release.
4. Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, Februray 2007 release.
5. Alberta Health and Wellness. Surveillance and Environmental Health. The First Nations Cohort Population, August 2007 release.

Notes: 1. Number of women aged 15-44 years diagnosed with PID in hospital, ambulatory care, and physician's office. ICD-9-CM=614, ICD-10=N70, N73, N74.2, N74.4.
2. The number of cases adjusted by the age distribution of the 1996 Canadian census women aged 15-44 years per 100,000 population.
3. The number of PID episodes with 60 days interval between visits from hospital admission, ambulatory care, and physician office visit, January 1998 to December 2006.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 13.3.2. Pelvic Inflammatory Disease (PID) Episodes and Rates by Age Group, Alberta, 1998 to 2006 Combined

	15-19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	15 - 44
Number of PID cases (episodes)[1]	5,337	8,469	8,677	9,471	9,264	7,890	49,108
Rate (per 100,000 women)[2]	533.7	853.6	871.8	923.2	816.2	656.3	773.3
Standard error (SE)	7.3	9.2	9.3	9.4	8.4	7.4	3.5

Source: 1. Alberta Health and Wellness. BIE. Inpatient database, August 2007 release.
2. Alberta Health and Wellness. BIE. Ambulatory Care Database, November 2007 release.
3. Alberta Health and Wellness. BIE. Physician Claims Database, August 2007 release.
4. Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, Februray 2007 release.
5. Alberta Health and Wellness. Surveillance and Environmental Health. The First Nations Cohort Population, August 2007 release.

Notes: 1. The number of PID episodes with 60 days interval between visits from hospital admission, ambulatory care, and physician office visit combined, January 1998 to December 2006.
2. The number of PID cases (episodes) per 100,000 women in each age group.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 13.3.3. Pelvic Inflammatory Disease (PID) Episodes and Rates by RHA, Alberta, 2004 to 2006 Combined

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[3]
Number of PID cases (episodes)[1]	621	394	4,537	1,248	550	3,596	1,094	936	565	14,001
Rate (per 100,000 women 15-44)	649.7	619.8	554.0	660.1	837.1	530.0	964.7	1023.5	1034.8	644.9
Age-adjusted rate[2]	663.1	633.0	557.0	675.0	884.2	540.7	1001.9	1021.4	1047.5	653.5
Standard error of adjusted rate (SE)	27.1	32.2	8.3	19.4	38.1	9.1	30.6	33.6	44.3	5.6

Source: 1. Alberta Health and Wellness. BIE. Inpatient database, August 2007 release.
2. Alberta Health and Wellness. BIE. Ambulatory Care Database, November 2007 release.
3. Alberta Health and Wellness. BIE. Physician Claims Database, August 2007 release.
4. Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, Februray 2007 release.
5. Alberta Health and Wellness. Surveillance and Environmental Health. The First Nations Cohort Population, August 2007 release.

Notes: 1. The number of PID episodes with 60 days interval between visits from hospital admission, ambulatory care, and physician office visit combined, January 1998 to December 2006.
2. The number of cases adjusted by the age distribution of the 1996 Canadian census women aged 15-44 years per 100,000 population.
3. Including unknown RHAs.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 13.3.4. Pelvic Inflammatory Disease (PID) Episodes and Rates by RHA and Year, Alberta, 2004 to 2006

2004	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[3]**
Number of PID cases (episodes)[1]	240	129	1,429	488	201	1,275	355	355	163	4,750
Rate (per 100,000 women 15-44)	752.7	613.1	531.7	777.4	912.3	568.1	933.5	1179.8	912.6	662.5
Age-adjusted rate[2]	760.1	619.1	533.8	801.4	969.1	578.4	987.5	1166.8	920.5	671.1
Standard error of adjusted rate (SE)	49.9	55.1	14.1	36.7	69.0	16.3	52.7	62.3	72.5	9.8
2005	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[3]**
Number of PID cases (episodes)[1]	188	134	1,553	405	194	1,125	372	265	216	4,637
Rate (per 100,000 women 15-44)	591.1	632.9	571.5	644.4	886.3	499.7	986.7	875.0	1188.5	643.3
Age-adjusted rate[2]	607.3	656.8	575.1	664.1	936.1	511.0	1027.5	882.8	1224.9	654.2
Standard error of adjusted rate (SE)	45.1	57.3	14.6	33.5	67.9	15.3	53.8	54.6	83.7	9.7
2006	**Chinook**	**Palliser**	**Calgary**	**David Thompson**	**East Central**	**Capital**	**Aspen**	**Peace Country**	**Northern Lights**	**Alberta[3]**
Number of PID cases (episodes)[1]	193	131	1,555	355	155	1,196	367	316	186	4,614
Rate (per 100,000 women 15-44)	605.1	613.3	558.4	559.5	711.6	522.5	974.1	1017.0	1002.0	629.3
Age-adjusted rate[2]	623.9	621.5	561.5	562.0	747.0	533.2	991.5	1015.8	996.3	636.0
Standard error of adjusted rate (SE)	45.8	54.8	14.2	30.3	60.6	15.5	52.4	57.6	73.6	9.4

Source: 1. Alberta Health and Wellness. BIE. Inpatient database, August 2007 release.
2. Alberta Health and Wellness. BIE. Ambulatory Care Database, November 2007 release.
3. Alberta Health and Wellness. BIE. Physician Claims Database, August 2007 release.
4. Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, Februray 2007 release.
5. Alberta Health and Wellness. Surveillance and Environmental Health. The First Nations Cohort Population, August 2007 release.

Notes: 1. The number of PID episodes with 60 days interval between visits from hospital admission, ambulatory care, and physician office visit combined, January 1998 to December 2006.
2. The number of cases adjusted by the age distribution of the 1996 Canadian census women aged 15-44 years per 100,000 population.
3. Including unknown RHAs.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 13.3.5. Pelvic Inflammatory Disease (PID) Cases, Percents, Rates, and Rate Ratios by First Nations Status and Year, Alberta, 1998 to 2006

	98	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**98-06**
First Nations										
Number of PID cases (episodes)[1]	770	717	689	694	617	574	496	421	446	5,424
Rate (per 100,000 First Nations Women)	2,292.6	2,063.3	1,926.4	1,893.7	1,647.7	1,506.0	1,282.3	1,076.4	1,127.6	1,625.6
Age-adjusted rate[2]	2,227.8	2,040.1	1,944.8	1,912.0	1,682.6	1,523.8	1,318.1	1,099.0	1,147.2	1,636.9
Standard error of adjusted rate (SE)	81.6	77.1	74.8	73.3	68.3	64.2	59.7	54.2	54.8	22.5
Non-First Nations										
Number of PID cases (episodes)[1]	5,765	5,514	5,415	5,169	4,755	4,428	4,254	4,216	4,168	43,684
Rate (per 100,000 non-First Nations women)	898.4	844.5	824.5	779.2	706.9	655.3	627.2	618.5	600.9	726.0
Age-adjusted rate[2]	907.0	855.6	833.9	791.7	717.6	662.6	634.7	629.3	607.2	735.4
Standard error of adjusted rate (SE)	11.9	11.5	11.3	11.0	10.4	10.0	9.8	9.7	9.5	3.5
Rate Ratio[3]										
Crude	2.6	2.4	2.3	2.4	2.3	2.3	2.0	1.7	1.9	2.2
Age-adjusted	2.5	2.4	2.3	2.4	2.3	2.3	2.1	1.7	1.9	2.2

Source: 1. Alberta Health and Wellness. BIE. Inpatient database, August 2007 release.
2. Alberta Health and Wellness. BIE. Ambulatory Care Database, November 2007 release.
3. Alberta Health and Wellness. BIE. Physician Claims Database, August 2007 release.
4. Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, Februray 2007 release.
5. Alberta Health and Wellness. Surveillance and Environmental Health. The First Nations Cohort Population, August 2007 release.

Notes: 1. The number of PID episodes with 60 days interval between visits from hospital admission, ambulatory care, and physician office visit combined, January 1998 to December 2006.
2. The number of cases adjusted by the age distribution of the 1996 Canadian census women aged 15-44 years per 100,000 population.
3. Ratio of the rate for First Nations to the rate for Non-First Nations.
Data include Alberta residents only.
Data may differ from previously published data due to differences in definitions and dates of data extraction.

14.

Sexually Transmitted Infection Co-Infections

14.1 Fundamentals

14.2 National and International Data

14.3 Alberta Data

Alberta Blood-borne Pathogens and Sexually Transmitted Infections
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14.1 Fundamentals

The concurrent presence of more than one sexually-transmitted infection can greatly complicate medical management of the patient. From a public health perspective, presence of multiple sexually-transmitted infections has implications for risk management and behaviour change programs. We report both concurrent co-infections (occurring in the individual at overlapping times) and cumulative co-infections (presence of two infections, whether at the same time or consecutively within a year).

One of the most common co-infections, especially affecting young women, is chlamydia/gonorrhea co-infection.

Chlamydia/gonorrhea co-infections are common. Treatment of one infection is often accompanied by presumptive treatment of the other prior to laboratory confirmation of a co-infection. Because both chlamydia and gonorrhea are often asymptomatic (particularly among women), co-infections can easily progress to complications such as PID. Chlamydia/gonorrhea co-infections are most common among younger persons. [60, 61, 62, 63]

A number of factors have combined to increase rates of HIV co-infection with syphilis.

The reasons for rising sexually-transmitted infection rates are multi-factorial, and have been attributed to increasing rates of unsafe sexual behaviours, complacency around HIV infection, and in recent years in Alberta, an economic boom with a resulting influx of large numbers of temporary and permanent workers. Sexually-transmitted infections increase the risk of acquisition and transmission of HIV. This is especially true for genital ulcer diseases such as syphilis. The clinical course of syphilis is changed in the presence of HIV in some patients, and syphilis relapse is more common when HIV infection is also present. Treatment of syphilis is affected by the immune system status of the patient, so treatment failure may occur more often in some patients co-infected with HIV. [64, 65, 66]

14.2 National and International Data

Gonorrhea patients have a high likelihood of chlamydia co-infection. The rate of co-infection with gonorrhea in chlamydia patients appears to be somewhat lower.

Men who have sex with men are the group are more likely to have HIV/syphilis co-infections.

Co-infections are not notifiable in Alberta (or nationally), so accurate estimates of national and international rates are not available.

Chlamydia infection in patients with gonorrhea may occur in as many as 45% of gonorrhea-infected patients. Often, percentages are reported to be higher in women. The percentage of chlamydia-infected persons who have gonorrhea is generally lower (around 30% or less). However, these numbers vary widely because they are generally based on small-scale studies. [60, 61, 62, 63]

Syphilis co-infections with HIV in men who have sex with men in one study ranged from 20 to 73%. Given the common risk factors, infection with syphilis is a strong correlate of HIV infection. [66]

14.3 *Alberta Data*

In 2006, 5.1% of newly diagnosed chlamydia cases were concurrently co-infected with gonorrhea.

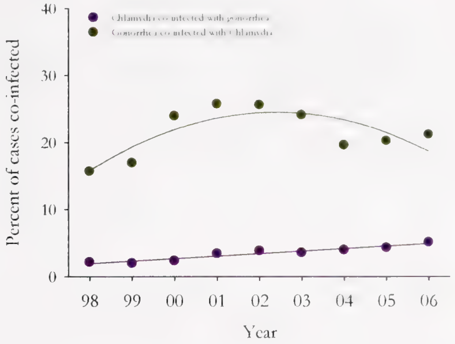
In 2006, one in five newly diagnosed gonorrhea cases was concurrently co-infected with chlamydia.

About one in 20 newly diagnosed HIV/AIDS cases were concurrently co-infected with syphilis (any stage) in 2006.

In 2006, 4.3% of newly diagnosed syphilis cases (any stage) were concurrently co-infected with HIV/AIDS.

Time Trends (see Table 14.3.1)

Percent of Concurrent Chlamydia/Gonorrhea Co-Infections, Alberta, 1998 - 2006



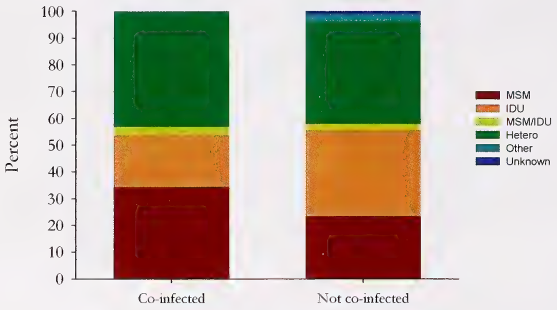
- Over the time period 1998 to 2006, the percentage of newly diagnosed chlamydia cases that were concurrently co-infected with gonorrhea increased from 2.1% (112 cases) to 5.1% (536 cases), reflecting the growing incidence of both of these infections.
- Almost one in ten (9.6%) of chlamydia cases newly diagnosed in 2006 had been infected with gonorrhea at some time between 1998 and 2006 (cumulative co-infection).
- A higher percentage of gonorrhea cases was co-infected than of chlamydia cases. The concurrent co-infection rate for newly diagnosed gonorrhea cases with chlamydia increased between 1998 and 2001, and then decreased in 2004. By 2006, the concurrent co-infection rate for newly diagnosed gonorrhea cases with chlamydia was 21.2%—one in five cases (454 cases).
- There were fewer HIV/AIDS and syphilis (any stage) co-infections. The concurrent co-infection rate for newly diagnosed HIV/AIDS cases with syphilis (any stage) was 5.2% in 2006 (12 cases). There were no cases in this category from 1998 to 2004.
- In 2006, 6.5% of newly diagnosed HIV/AIDS cases had been infected with syphilis (any stage) at some time between 1998 and 2006 (cumulative co-infection).
- Syphilis (any stage) co-infections with HIV/AIDS (concurrent) were not found in Alberta prior to 2004. By 2006, 4.3% of newly diagnosed syphilis cases (any stage) were concurrently co-infected with HIV/AIDS.
- In 2006, 8.7% of newly diagnosed syphilis cases (any stage) were infected with HIV/AIDS (cumulative co-infection).
- Although the number of cases is very low, HIV/AIDS with infectious syphilis and infectious syphilis with HIV/AIDS co-infections were most frequent in 2006.

14.3 Alberta Data

HIV/AIDS co-infections with syphilis (any stage) are most common in those exposed to HIV through heterosexual contact or among men who have sex with men, reflecting the increased sexual transmission of HIV with syphilis.

Exposure Categories (see Table 14.3.2)

Percent of Newly Reported HIV/AIDS Cases Cumulatively Co-Infected with Syphilis (any stage) by Exposure Category, Alberta, 1998 - 2006 Combined

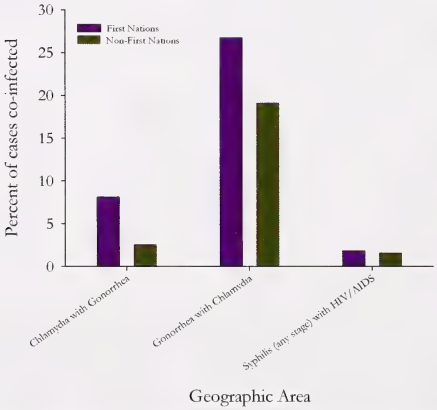


- Among newly diagnosed HIV/AIDS cases cumulatively co-infected with syphilis (any stage), those exposed to HIV through heterosexual contact made up 43.3% of co-infected cases, followed by men who have sex with men (34.3%).
- Men who have sex with men comprise a smaller percentage (and injection drug users make up a larger percentage) of the not co-infected group, compared to the co-infected group.

Co-infections between chlamydia and gonorrhea occur at a higher rate in First Nations individuals than in non-First Nations individuals. Syphilis (any stage) with HIV/AIDS co-infections do not vary by First Nations status.

First Nations Status (see Tables 14.3.3 and 14.3.4)

Percent of Concurrent Co-Infection Cases by Co-Infection Type and First Nations Status, Alberta, 1998 - 2006 Combined



- First Nations chlamydia cases are more likely to be concurrently co-infected with gonorrhea than non-First Nations cases (8.1% of First Nations cases were co-infected for 1998 to 2006 combined, compared with 2.6% of non-First Nations cases). The First Nations and non-First Nations percentages for cumulative co-infections were 20.7% and 5.3%, respectively. Only concurrent co-infections are shown in the figure above.

14.3 Alberta Data

First Nations Status ***continued*** (see Tables 14.3.3 and 14.3.4)

- First Nations gonorrhea cases are also more likely to be concurrently co-infected with chlamydia than non-First Nations cases (26.7% of First Nations cases were co-infected for 1998 to 2006 combined, compared with 19.1% of non-First Nations cases). The First Nations and non-First Nations percentages for cumulative co-infections were 60.0% and 36.7%, respectively.
- Co-infection rates for syphilis (any stage) cases co-infected with HIV/AIDS did not vary significantly with First Nations status for 1998 to 2006 combined.

Limitations and Methodology Notes

Ethnic groups are defined in the Glossary.

Concurrent co-infections are newly diagnosed cases diagnosed within a one month window of another pathogen (e.g., a newly diagnosed chlamydia case with a report of gonorrhea within one month before or after the diagnosis of chlamydia infection).

Cumulative co-infections are newly diagnosed cases diagnosed with another pathogen at any point between 1998 and 2006 (e.g., a newly diagnosed chlamydia case with a report of gonorrhea at any time before or after chlamydia diagnosis, as long as it is between 1998 and 2006).

Due to small numbers of cases, syphilis cases were combined for all stages (congenital, infectious, and non-infectious syphilis) for most syphilis co-infection analyses.

Table 14.3.1. Sexually Transmitted Infection Co-Infection Cases and Percents by Pathogens, Co-Infection Type, and Year, Alberta, 1998 to 2006

Chlamydia with Gonorrhea	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Newly Dianosed Chlamydia cases	5,252	5,420	6,032	6,487	7,357	7,901	8,346	8,837	10,446	66,078
Cases co-infected with Gonorrhea, cumulative[1]	276	298	428	534	652	692	765	774	1,005	5,424
% of Chlamydia cases co-infected, cumulative[2]	5.3	5.5	7.1	8.2	8.9	8.8	9.2	8.8	9.6	8.2
Cases co-infected with Gonorrhea, concurrent[3]	112	107	142	222	281	279	329	378	536	2,386
% of Chlamydia cases co-infected, concurrent[4]	2.1	2.0	2.4	3.4	3.8	3.5	3.9	4.3	5.1	3.6
Gonorrhea with Chlamydia	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly Dianosed Gonorrhea cases	529	537	589	793	977	1,035	1,378	1,528	2,145	9,511
Cases co-infected with Chlamydia, cumulative[1]	187	175	241	353	464	518	614	728	931	4,211
% of Gonorrhea cases co-infected, cumulative[2]	35.3	32.6	40.9	44.5	47.5	50.0	44.6	47.6	43.4	44.3
Cases co-infected with Chlamydia, concurrent[3]	83	91	141	204	250	249	270	309	454	2,051
% of Gonorrhea cases co-infected, concurrent[4]	15.7	16.9	23.9	25.7	25.6	24.1	19.6	20.2	21.2	21.6
HIV/AIDS with Syphilis[5]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed HIV/AIDS cases	105	168	165	156	166	143	160	179	231	1,473
Cases co-infected with Syphilis, cumulative[1]	4	5	4	7	5	8	7	12	15	67
% of HIV/AIDS cases co-infected, cumulative[2]	3.8	3.0	2.4	4.5	3.0	5.6	4.4	6.7	6.5	4.5
Cases co-infected with syphilis, concurrent[3]	0	0	0	0	0	0	0	2	12	14
% of HIV/AIDS cases co-infected, concurrent[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.2	1.0
Syphilis[5] with HIV/AIDS	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed Syphilis cases	42	40	53	51	56	79	136	227	299	983
Cases co-infected with HIV/AIDS, cumulative[1]	2	4	3	2	3	8	5	17	26	70
% of Syphilis cases co-infected, cumulative[2]	4.8	10.0	5.7	3.9	5.4	10.1	3.7	7.5	8.7	7.1
Cases co-infected with HIV/AIDS, concurrent[3]	0	0	0	0	0	0	1	2	13	16
% of Syphilis cases co-infected, concurrent[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.9	4.3	1.6
HIV/AIDS with Infectious Syphilis[6]	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed HIV/AIDS cases	105	168	165	156	166	143	160	179	231	1,473
Cases co-infected with Syphilis, cumulative[1]	1	2	4	4	2	6	4	4	8	35
% of HIV/AIDS cases co-infected, cumulative[2]	1.0	1.2	2.4	2.6	1.2	4.2	2.5	2.2	3.5	2.4
Cases co-infected with syphilis, concurrent[3]	0	0	0	0	0	0	0	0	6	6
% of HIV/AIDS cases co-infected, concurrent[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.4
Infectious Syphilis[6] with HIV/AIDS	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
Newly diagnosed Syphilis cases	6	2	16	22	17	36	75	146	218	538
Cases co-infected with HIV/AIDS, cumulative[1]	0	0	3	1	0	5	3	9	16	37
% of Syphilis cases co-infected, cumulative[2]	0.0	0.0	18.8	4.5	0.0	13.9	4.0	6.2	7.3	6.9
Cases co-infected with HIV/AIDS, concurrent[3]	0	0	0	0	0	0	1	0	7	8
% of Syphilis cases co-infected, concurrent[4]	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	3.2	1.5

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.

Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes:

1. The number of newly diagnosed STI cases co-infected with a given STI of interest at any time between 1998 and 2006.
2. The percentage of newly diagnosed STI cases co-infected with a given STI of interest at any time between 1998 and 2006.
3. The number of newly diagnosed STI cases concurrently co-infected (within a one month window) with a given STI of interest.
4. The percentage of newly diagnosed STI cases concurrently co-infected (within a one month window) with a given STI of interest.
5. Syphilis cases include infectious, non-infectious and congenital syphilis.
6. Congenital and non-infectious syphilis cases were excluded for this analysis.

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 14.3.2. HIV/AIDS with Syphilis (any stage)[1] Co-Infection Cases, Percents, and Ratios by Exposure Category, Alberta, 1998 to 2006 Combined

	Co-infected[2]	Not Co-infected	Ratio[3]
MSM			
Cases	23	331	
% of MSM cases[4]	6.5	93.5	
% of co-infected/not co-infected cases[5]	34.3	23.5	1.5
IDU			
Cases	13	450	
% of IDU cases[4]	2.8	97.2	
% of co-infected/not co-infected cases[5]	19.4	32.0	0.6
MSM and IDU			
Cases	2	32	
% of IDU cases[4]	5.9	94.1	
% of co-infected/not co-infected cases[5]	3.0	2.3	1.3
Heterosexual contact			
Cases	29	539	
% of heterosexual contact cases[4]	5.1	94.9	
% of co-infected/not co-infected cases[5]	43.3	38.3	1.1
Other			
Cases	0	36	
% of other exposure category cases[4]	0.0	100.0	
% of co-infected/not co-infected cases[5]	0.0	2.6	0.0
Unknown			
Cases	0	18	
% of unknown exposure category cases[4]	0.0	100.0	
% of co-infected/not co-infected cases[5]	0.0	1.3	0.0

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Syphilis cases include infectious, non-infectious and congenital syphilis.

2. Cumulative co-infections, in which the two diseases of interest were both newly diagnosed in the same patient at any time between 1998 and 2006.

3. Ratio of percent of a given exposure among co-infected cases to the percent among not co-infected cases.

4. Percent of co-infected or not co-infected cases within a given exposure category (row percent).

5. Percent of cases belonging to a given exposure category within co-infected or not co-infected cases (column percent).

Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

Table 14.3.3. Sexually Transmitted Infection Concurrent Co-Infection Cases, Percents, and Odds Ratios by Infection Type, Co-Infection Status, and First Nations Status, Alberta, 1998 to 2006 Combined

	Co-infected[1]		Not Co-Infected		Odds Ratio (95% CI)[2]
	First Nations	Non-First Nations	First Nations	Non-First Nations	
Newly diagnosed Chlamydia with Gonorrhea					
Cases	1,019	1,367	11,541	52,151	
% of co-infection by ethnic group[3]	8.1	2.6	91.9	97.4	3.37
% of ethnicity by co-infection status group[4]	42.7	57.3	18.1	81.9	(3.10-3.66)
Newly diagnosed Gonorrhea with Chlamydia					
Cases	826	1,225	2,265	5,195	
% of co-infection by ethnic group[3]	26.7	19.1	73.3	80.9	1.6
% of ethnicity by co-infection status group[4]	40.3	59.7	30.4	69.6	(1.40-1.71)
Newly Diagnosed Syphilis (any stage)[5] with HIV/AIDS					
Cases	3	13	161	806	
% of co-infection by ethnic group[3]	1.8	1.6	98.2	98.4	1.2
% of ethnicity by co-infection status group[4]	18.8	81.3	16.6	83.4	(0.33-4.10)

Sources: Alberta Health and Wellness. CDRS database, August 2007 release.
Alberta Health and Wellness. BIE. AHCIP Quarterly Population Files, February 2007 release.

Notes: 1. Concurrent coinfection to which two diseases of interest were diagnosed within a one month window of one another.
2. Odds ratio for proportion of co-infection in First Nations cases vs. non-First Nations cases (with 95% confidence interval).
3. Percent of co-infected or non co-infected cases within a given ethnic group (e.g. percent of co-infected First Nations group + percent of not co-infected First Nations group = 100%).
4. Percent of First Nations or non-First Nations cases within a given co-infection status group (e.g., percent of co-infected First Nations group + percent of co-infected non-First Nations group = 100%.
5. Syphilis cases include infectious, non-infectious and congenital syphilis.
Data include Alberta residents only.

Data may differ from previously published data due to differences in definitions and dates of data extraction.

15.

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15.1 References

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16.

Appendices

16.1 Map of geographic areas
16.2 HIV/AIDS Case Report form
16.3 Notifiable Disease Report form
16.4 Notification of Sexually Transmitted Infections form
16.5 Case definitions
16.6 Missing data
16.7 Populations

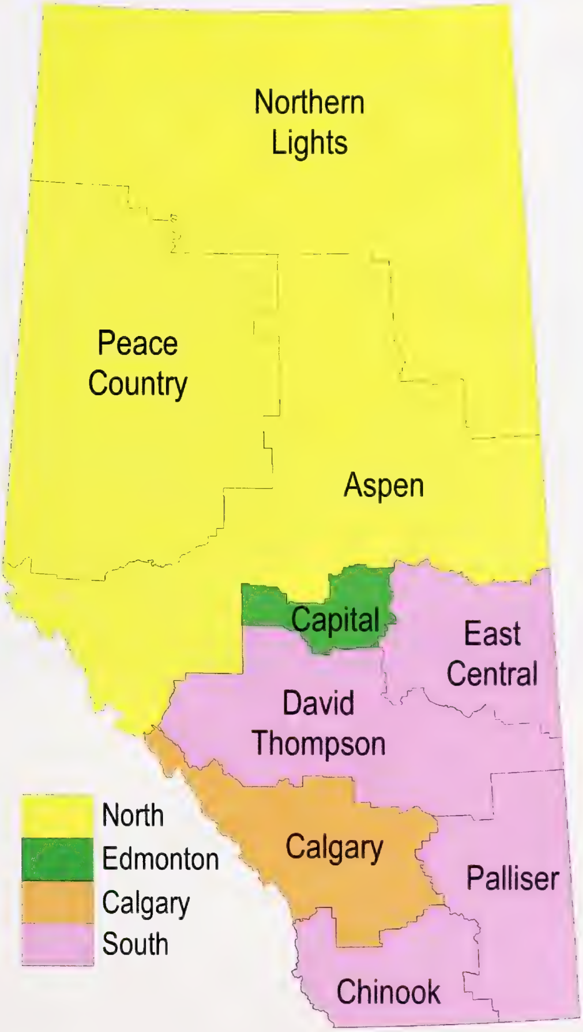
Alberta Blood-borne Pathogens and Sexually Transmitted Infections
Surveillance Report 2008

Alberta

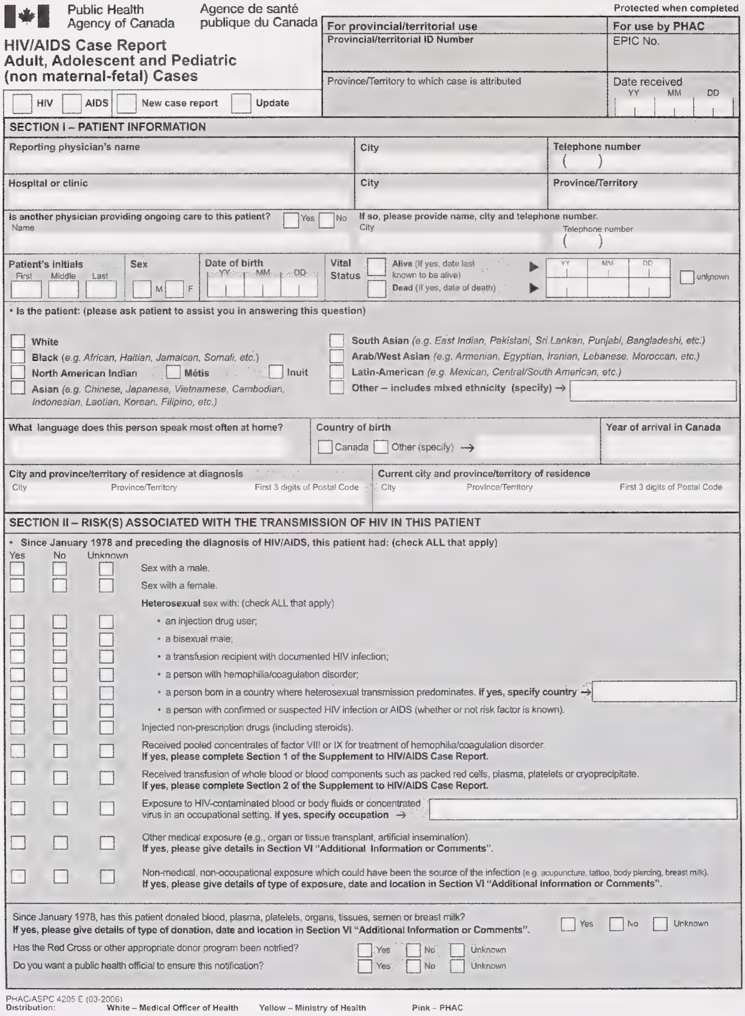
16.1 Map of Geographic Areas

Below is a map of Alberta, showing the four geographic areas used in some analyses appearing in this report.

The areas were defined by RHAs (December 2003 boundaries).
Southern Alberta includes residents of Chinook, Palliser, David Thompson and East Central RHAs.
Calgary area includes residents of Calgary RHA.
Edmonton area includes residents of Capital RHA.
Northern Alberta includes residents of Aspen, Peace Country, and Northern Lights RHAs.



16.2 *HIV/AIDS Case Report Form*



Public Health Agency of Canada
Agence de santé publique du Canada

Protected when completed

HIV/AIDS Case Report
Adult, Adolescent and Pediatric (non maternal-fetal) Cases

☐ HIV ☐ AIDS ☐ New case report ☐ Update

For provincial/territorial use	**For use by PHAC**
Provincial/territorial ID Number	EPIC No.
Province/Territory to which case is attributed	Date received YY MM DD

SECTION I – PATIENT INFORMATION

Reporting physician's name	**City**	**Telephone number** ( )
Hospital or clinic	**City**	**Province/Territory**

Is another physician providing ongoing care to this patient? ☐ Yes ☐ No **If so, please provide name, city and telephone number.**
Name
City
Telephone number ( )

Patient's initials First ☐ Middle ☐ Last ☐

Sex ☐ M ☐ F

Date of birth YY MM DD

Vital Status
☐ **Alive** (If yes, date last known to be alive) ▶ YY MM DD
☐ **Dead** (If yes, date of death) ▶
☐ unknown

• **Is the patient: (please ask patient to assist you in answering this question)**

- ☐ **White**
- ☐ **Black** *(e.g. African, Haitian, Jamaican, Somali, etc.)*
- ☐ **North American Indian** ☐ **Métis** ☐ **Inuit**
- ☐ **Asian** *(e.g. Chinese, Japanese, Vietnamese, Cambodian, Indonesian, Laotian, Korean, Filipino, etc.)*
- ☐ **South Asian** *(e.g. East Indian, Pakistani, Sri Lankan, Punjabi, Bangladeshi, etc.)*
- ☐ **Arab/West Asian** *(e.g. Armenian, Egyptian, Iranian, Lebanese, Moroccan, etc.)*
- ☐ **Latin-American** *(e.g. Mexican, Central/South American, etc.)*
- ☐ **Other – includes mixed ethnicity (specify)** →

What language does this person speak most often at home?	**Country of birth** ☐ Canada ☐ Other (specify) →	**Year of arrival in Canada**

City and province/territory of residence at diagnosis City Province/Territory First 3 digits of Postal Code	**Current city and province/territory of residence** City Province/Territory First 3 digits of Postal Code

SECTION II – RISK(S) ASSOCIATED WITH THE TRANSMISSION OF HIV IN THIS PATIENT

• **Since January 1978 and preceding the diagnosis of HIV/AIDS, this patient had: (check ALL that apply)**

Yes	No	Unknown	
☐	☐	☐	Sex with a male.
☐	☐	☐	Sex with a female.
			Heterosexual sex with: (check ALL that apply)
☐	☐	☐	• an injection drug user;
☐	☐	☐	• a bisexual male;
☐	☐	☐	• a transfusion recipient with documented HIV infection;
☐	☐	☐	• a person with hemophilia/coagulation disorder;
☐	☐	☐	• a person born in a country where heterosexual transmission predominates. **If yes, specify country** →
☐	☐	☐	• a person with confirmed or suspected HIV infection or AIDS (whether or not risk factor is known).
☐	☐	☐	Injected non-prescription drugs (including steroids).
☐	☐	☐	Received pooled concentrates of factor VIII or IX for treatment of hemophilia/coagulation disorder. **If yes, please complete Section 1 of the Supplement to HIV/AIDS Case Report.**
☐	☐	☐	Received transfusion of whole blood or blood components such as packed red cells, plasma, platelets or cryoprecipitate. **If yes, please complete Section 2 of the Supplement to HIV/AIDS Case Report.**
☐	☐	☐	Exposure to HIV-contaminated blood or body fluids or concentrated virus in an occupational setting. **If yes, specify occupation** →
☐	☐	☐	Other medical exposure (e.g., organ or tissue transplant, artificial insemination). **If yes, please give details in Section VI "Additional Information or Comments".**
☐	☐	☐	Non-medical, non-occupational exposure which could have been the source of the infection (e.g. acupuncture, tattoo, body piercing, breast milk). **If yes, please give details of type of exposure, date and location in Section VI "Additional Information or Comments".**

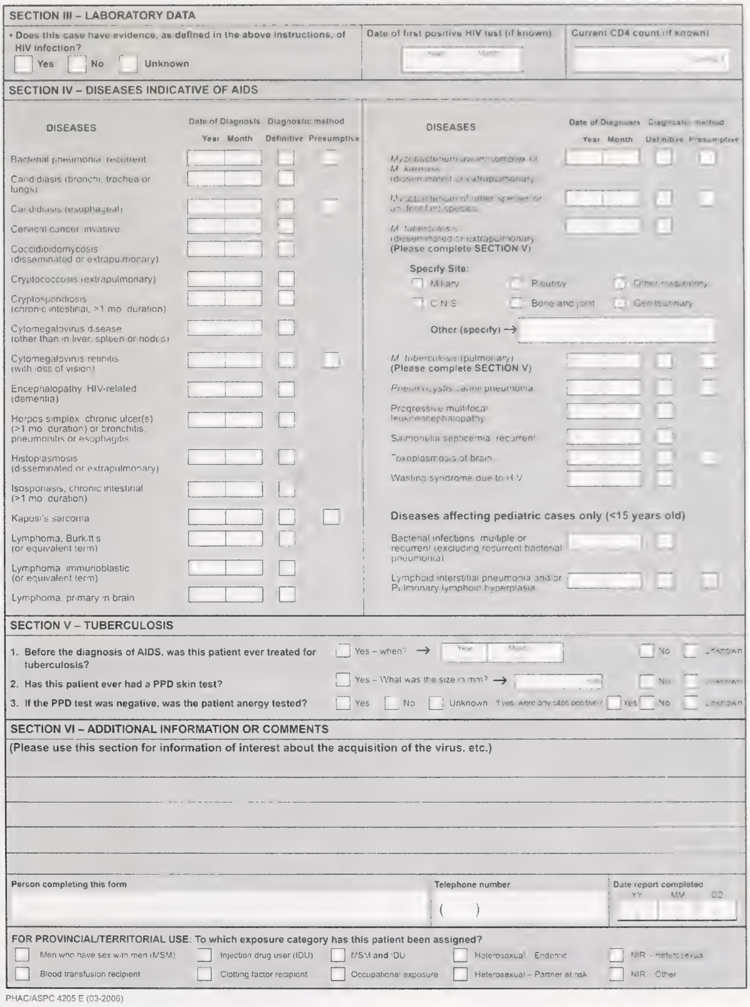
Since January 1978, has this patient donated blood, plasma, platelets, organs, tissues, semen or breast milk? **If yes, please give details of type of donation, date and location in Section VI "Additional Information or Comments".** ☐ Yes ☐ No ☐ Unknown

Has the Red Cross or other appropriate donor program been notified? ☐ Yes ☐ No ☐ Unknown

Do you want a public health official to ensure this notification? ☐ Yes ☐ No ☐ Unknown

PHAC/ASPC 4205 E (03-2006)
Distribution: **White – Medical Officer of Health** **Yellow – Ministry of Health** **Pink – PHAC**

16.2 HIV/AIDS Case Report Form



SECTION III – LABORATORY DATA

• Does this case have evidence, as defined in the above instructions, of HIV infection?
☐ Yes ☐ No ☐ Unknown

Date of first positive HIV test (if known)

Current CD4 count (if known)

SECTION IV – DISEASES INDICATIVE OF AIDS

DISEASES	Date of Diagnosis Year	Date of Diagnosis Month	Diagnostic method Definitive	Diagnostic method Presumptive
Bacterial pneumonia, recurrent			☐	☐
Candidiasis (bronchi, trachea or lungs)			☐	
Candidiasis (esophageal)			☐	☐
Cervical cancer, invasive			☐	
Coccidioidomycosis (disseminated or extrapulmonary)			☐	
Cryptococcosis (extrapulmonary)			☐	
Cryptosporidiosis (chronic intestinal, >1 mo. duration)			☐	
Cytomegalovirus disease (other than in liver, spleen or nodes)			☐	
Cytomegalovirus retinitis (with loss of vision)			☐	☐
Encephalopathy, HIV-related (dementia)			☐	
Herpes simplex: chronic ulcer(s) (>1 mo. duration) or bronchitis, pneumonitis or esophagitis			☐	
Histoplasmosis (disseminated or extrapulmonary)			☐	
Isosporiasis, chronic intestinal (>1 mo. duration)			☐	
Kaposi's sarcoma			☐	☐
Lymphoma, Burkitt's (or equivalent term)			☐	
Lymphoma, immunoblastic (or equivalent term)			☐	
Lymphoma, primary in brain			☐	

DISEASES	Date of Diagnosis Year	Date of Diagnosis Month	Diagnostic method Definitive	Diagnostic method Presumptive
Mycobacterium avium complex or *M. kansasii* (disseminated or extrapulmonary)			☐	☐
Mycobacterium of other species or unidentified species			☐	☐
M. tuberculosis (disseminated or extrapulmonary) **(Please complete SECTION V)**			☐	

Specify Site:

☐ Miliary ☐ Pleurisy ☐ Other respiratory
☐ C.N.S. ☐ Bone and joint ☐ Genitourinary

Other (specify) →

DISEASES	Date of Diagnosis Year	Date of Diagnosis Month	Diagnostic method Definitive	Diagnostic method Presumptive
M. tuberculosis (pulmonary) **(Please complete SECTION V)**			☐	☐
Pneumocystis carinii pneumonia			☐	☐
Progressive multifocal leukoencephalopathy			☐	
Salmonella septicemia, recurrent			☐	
Toxoplasmosis of brain			☐	☐
Wasting syndrome due to HIV			☐	

Diseases affecting pediatric cases only (<15 years old)

DISEASES	Date of Diagnosis Year	Date of Diagnosis Month	Diagnostic method Definitive	Diagnostic method Presumptive
Bacterial infections, multiple or recurrent (excluding recurrent bacterial pneumonia)			☐	
Lymphoid interstitial pneumonia and/or Pulmonary lymphoid hyperplasia			☐	☐

SECTION V – TUBERCULOSIS

1. **Before the diagnosis of AIDS, was this patient ever treated for tuberculosis?** ☐ Yes – when? → Year Month ☐ No ☐ Unknown
2. **Has this patient ever had a PPD skin test?** ☐ Yes – What was the size in mm? → mm ☐ No ☐ Unknown
3. **If the PPD test was negative, was the patient anergy tested?** ☐ Yes ☐ No ☐ Unknown If yes, were any sites positive? ☐ Yes ☐ No ☐ Unknown

SECTION VI – ADDITIONAL INFORMATION OR COMMENTS

(Please use this section for information of interest about the acquisition of the virus, etc.)

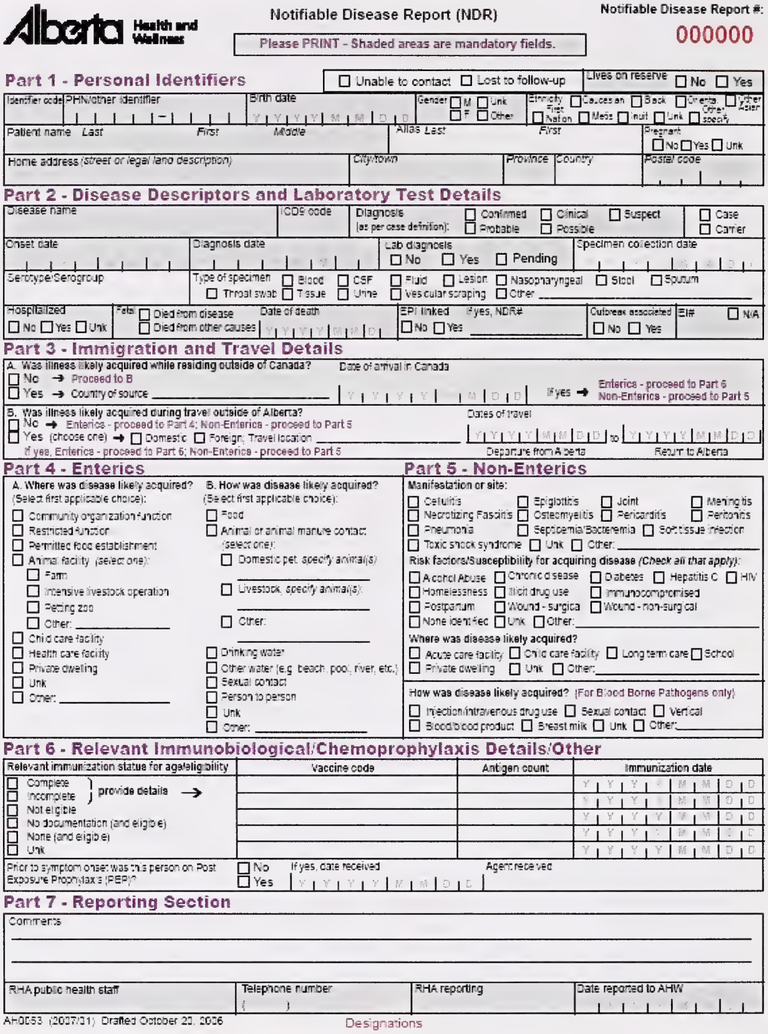
Person completing this form	**Telephone number** ( )	**Date report completed** YY MM DD

FOR PROVINCIAL/TERRITORIAL USE: To which exposure category has this patient been assigned?

☐ Men who have sex with men (MSM) ☐ Injection drug user (IDU) ☐ MSM and IDU ☐ Heterosexual – Endemic ☐ NIR – Heterosexual
☐ Blood transfusion recipient ☐ Clotting factor recipient ☐ Occupational exposure ☐ Heterosexual – Partner at risk ☐ NIR – Other

PHAC/ASPC 4205 E (03-2006)

16.3 Notifiable Disease Report Form



Alberta Health and Wellness

Notifiable Disease Report (NDR)

Please PRINT - Shaded areas are mandatory fields.

Notifiable Disease Report #: 000000

Part 1 - Personal Identifiers

☐ Unable to contact ☐ Lost to follow-up

Lives on reserve ☐ No ☐ Yes

Identifier code

PHN/other identifier

Birth date Y Y Y Y M M D D

Gender ☐ M ☐ F ☐ Unk ☐ Other

Ethnicity ☐ Caucasian ☐ Black ☐ Oriental ☐ Other Asian ☐ First Nation ☐ Metis ☐ Inuit ☐ Unk ☐ Other specify

Patient name *Last* *First* *Middle*

Alias *Last* *First*

Pregnant ☐ No ☐ Yes ☐ Unk

Home address *(street or legal land description)*

City/town

Province

Country

Postal code

Part 2 - Disease Descriptors and Laboratory Test Details

Disease name

ICD9 code

Diagnosis (as per case definition): ☐ Confirmed ☐ Clinical ☐ Suspect ☐ Probable ☐ Possible

☐ Case ☐ Carrier

Onset date

Diagnosis date

Lab diagnosis ☐ No ☐ Yes ☐ Pending

Specimen collection date

Serotype/Serogroup

Type of specimen ☐ Blood ☐ CSF ☐ Fluid ☐ Lesion ☐ Nasopharyngeal ☐ Stool ☐ Sputum ☐ Throat swab ☐ Tissue ☐ Urine ☐ Vesicular scraping ☐ Other ____

Hospitalized ☐ No ☐ Yes ☐ Unk

Fatal ☐ Died from disease ☐ Died from other causes

Date of death Y Y Y Y M M D

EPI linked ☐ No ☐ Yes If yes, NDR# ____

Outbreak associated ☐ No ☐ Yes

EI# ☐ N/A

Part 3 - Immigration and Travel Details

A. Was illness likely acquired while residing outside of Canada?

☐ No → Proceed to B

☐ Yes → Country of source ____

Date of arrival in Canada Y Y Y Y M D D

If yes → Enterics - proceed to Part 6
Non-Enterics - proceed to Part 5

B. Was illness likely acquired during travel outside of Alberta?

☐ No → Enterics - proceed to Part 4; Non-Enterics - proceed to Part 5

☐ Yes (choose one) → ☐ Domestic ☐ Foreign; Travel location ____

If yes, Enterics - proceed to Part 6; Non-Enterics - proceed to Part 5

Dates of travel Y Y Y Y M M D D to Y Y Y Y M M D D
Departure from Alberta Return to Alberta

Part 4 - Enterics

A. Where was disease likely acquired? (Select first applicable choice):

- ☐ Community organization function
- ☐ Restricted function
- ☐ Permitted food establishment
- ☐ Animal facility (select one):
  - ☐ Farm
  - ☐ Intensive livestock operation
  - ☐ Petting zoo
  - ☐ Other: ____
- ☐ Child care facility
- ☐ Health care facility
- ☐ Private dwelling
- ☐ Unk
- ☐ Other: ____

B. How was disease likely acquired? (Select first applicable choice):

- ☐ Food
- ☐ Animal or animal manure contact: (select one):
  - ☐ Domestic pet, specify animal(s) ____
  - ☐ Livestock, specify animal(s): ____
  - ☐ Other: ____
- ☐ Drinking water
- ☐ Other water (e.g. beach, pool, river, etc.)
- ☐ Sexual contact
- ☐ Person to person
- ☐ Unk
- ☐ Other: ____

Part 5 - Non-Enterics

Manifestation or site:

☐ Cellulitis ☐ Epiglottitis ☐ Joint ☐ Meningitis
☐ Necrotizing Fasciitis ☐ Osteomyelitis ☐ Pericarditis ☐ Peritonitis
☐ Pneumonia ☐ Septicemia/Bacteremia ☐ Soft tissue infection
☐ Toxic shock syndrome ☐ Unk ☐ Other: ____

Risk factors/Susceptibility for acquiring disease *(Check all that apply)*:

☐ Alcohol Abuse ☐ Chronic disease ☐ Diabetes ☐ Hepatitis C ☐ HIV
☐ Homelessness ☐ Illicit drug use ☐ Immunocompromised
☐ Postpartum ☐ Wound - surgical ☐ Wound - non-surgical
☐ None identified ☐ Unk ☐ Other: ____

Where was disease likely acquired?

☐ Acute care facility ☐ Child care facility ☐ Long term care ☐ School
☐ Private dwelling ☐ Unk ☐ Other: ____

How was disease likely acquired? (For Blood Borne Pathogens only)

☐ Injection/intravenous drug use ☐ Sexual contact ☐ Vertical
☐ Blood/blood product ☐ Breast milk ☐ Unk ☐ Other: ____

Part 6 - Relevant Immunobiological/Chemoprophylaxis Details/Other

Relevant immunization status for age/eligibility	Vaccine code	Antigen count	Immunization date
☐ Complete ☐ Incomplete } provide details →			Y Y Y Y M M D D
☐ Not eligible			Y Y Y Y M M D D
☐ No documentation (and eligible)			Y Y Y Y M M D D
☐ None (and eligible)			Y Y Y Y M M D D
☐ Unk			Y Y Y Y M M D D

Prior to symptom onset was this person on Post Exposure Prophylaxis (PEP)? ☐ No ☐ Yes

If yes, date received Y Y Y Y M M D D

Agent received

Part 7 - Reporting Section

Comments

RHA public health staff

Telephone number ( )

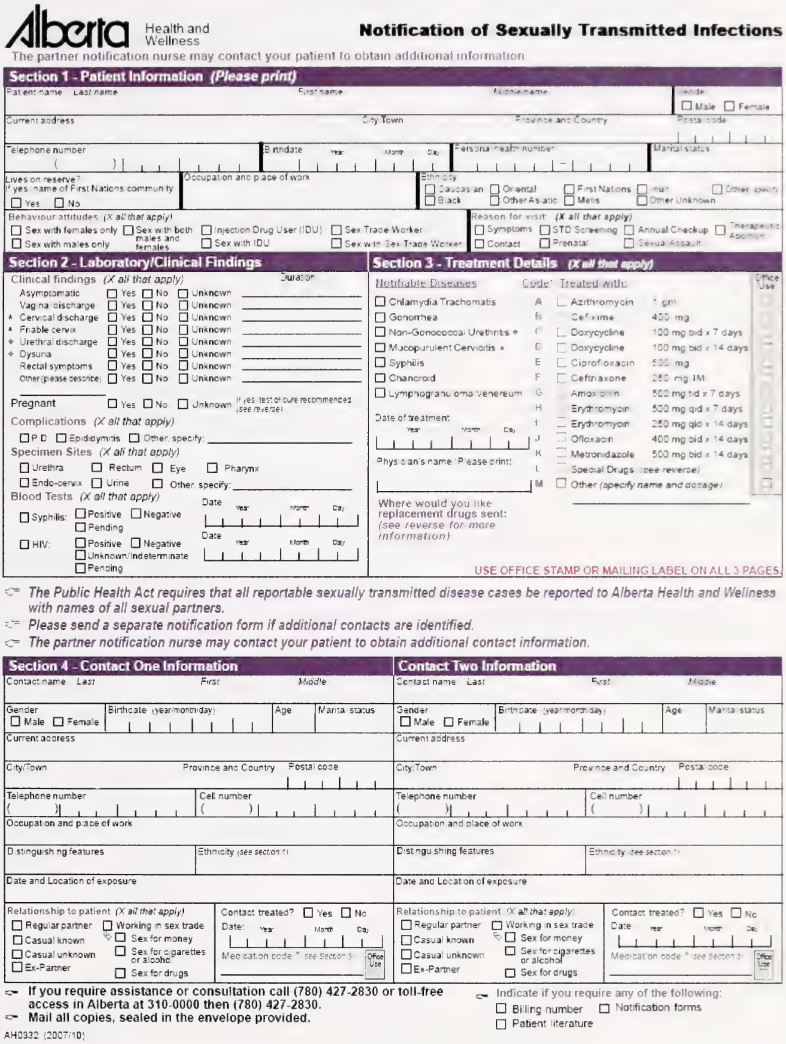
RHA reporting

Date reported to AHW

AH0053 (2007/01) Drafted October 23, 2006

Designations

16.4 Notification of Sexually Transmitted Infections form



Alberta Health and Wellness

Notification of Sexually Transmitted Infections

The partner notification nurse may contact your patient to obtain additional information

Section 1 - Patient Information *(Please print)*

Patient name *Last name* — *First name* — *Middle name*
Gender ☐ Male ☐ Female
Current address — City/Town — Province and Country — Postal code
Telephone number ( )
Birthdate Year Month Day
Personal health number
Marital status
Lives on reserve? If yes, name of First Nations community ☐ Yes ☐ No
Occupation and place of work
Ethnicity ☐ Caucasian ☐ Oriental ☐ First Nations ☐ Inuit ☐ Other specify ☐ Black ☐ Other Asiatic ☐ Metis ☐ Other Unknown
Behaviour attitudes *(X all that apply)* ☐ Sex with females only ☐ Sex with both males and females ☐ Injection Drug User (IDU) ☐ Sex Trade Worker ☐ Sex with males only ☐ Sex with IDU ☐ Sex with Sex Trade Worker
Reason for visit *(X all that apply)* ☐ Symptoms ☐ STD Screening ☐ Annual Checkup ☐ Therapeutic Abortion ☐ Contact ☐ Prenatal ☐ Sexual Assault

Section 2 - Laboratory/Clinical Findings

Clinical findings *(X all that apply)*

				Duration
Asymptomatic	☐ Yes	☐ No	☐ Unknown	
Vaginal discharge	☐ Yes	☐ No	☐ Unknown	
* Cervical discharge	☐ Yes	☐ No	☐ Unknown	
* Friable cervix	☐ Yes	☐ No	☐ Unknown	
◆ Urethral discharge	☐ Yes	☐ No	☐ Unknown	
◆ Dysuria	☐ Yes	☐ No	☐ Unknown	
Rectal symptoms	☐ Yes	☐ No	☐ Unknown	
Other (please describe)	☐ Yes	☐ No	☐ Unknown	

Pregnant ☐ Yes ☐ No ☐ Unknown If yes, test of cure recommended (see reverse)

Complications *(X all that apply)*
☐ P.I.D. ☐ Epididymitis ☐ Other, specify:

Specimen Sites *(X all that apply)*
☐ Urethra ☐ Rectum ☐ Eye ☐ Pharynx
☐ Endo-cervix ☐ Urine ☐ Other, specify:

Blood Tests *(X all that apply)*
☐ Syphilis: ☐ Positive ☐ Negative ☐ Pending — Date Year Month Day
☐ HIV: ☐ Positive ☐ Negative ☐ Unknown/Indeterminate ☐ Pending — Date Year Month Day

Section 3 - Treatment Details *(X all that apply)*

Notifiable Diseases	Code*	Treated with:		Office Use
☐ Chlamydia Trachomatis	A	☐ Azithromycin	1 gm	
☐ Gonorrhea	B	☐ Cefixime	400 mg	
☐ Non-Gonococcal Urethritis ◆	C	☐ Doxycycline	100 mg bid x 7 days	
☐ Mucopurulent Cervicitis *	D	☐ Doxycycline	100 mg bid x 14 days	
☐ Syphilis	E	☐ Ciprofloxacin	500 mg	
☐ Chancroid	F	☐ Ceftriaxone	250 mg IM	
☐ Lymphogranuloma Venereum	G	☐ Amoxicillin	500 mg tid x 7 days	
	H	☐ Erythromycin	500 mg qid x 7 days	
	I	☐ Erythromycin	250 mg qid x 14 days	
	J	☐ Ofloxacin	400 mg bid x 14 days	
	K	☐ Metronidazole	500 mg bid x 14 days	
	L	☐ Special Drugs *(see reverse)*		
	M	☐ Other *(specify name and dosage)*		

Date of treatment Year Month Day
Physician's name (Please print)
Where would you like replacement drugs sent: *(see reverse for more information)*

USE OFFICE STAMP OR MAILING LABEL ON ALL 3 PAGES

- *The Public Health Act requires that all reportable sexually transmitted disease cases be reported to Alberta Health and Wellness with names of all sexual partners.*
- *Please send a separate notification form if additional contacts are identified.*
- *The partner notification nurse may contact your patient to obtain additional contact information.*

Section 4 - Contact One Information

Contact name *Last* — *First* — *Middle*
Gender ☐ Male ☐ Female — Birthdate (year/month/day) — Age — Marital status
Current address
City/Town — Province and Country — Postal code
Telephone number ( ) — Cell number ( )
Occupation and place of work
Distinguishing features — Ethnicity *(see section 1)*
Date and Location of exposure
Relationship to patient *(X all that apply)* ☐ Regular partner ☐ Casual known ☐ Casual unknown ☐ Ex-Partner ☐ Working in sex trade ☐ Sex for money ☐ Sex for cigarettes or alcohol ☐ Sex for drugs
Contact treated? ☐ Yes ☐ No — Date: Year Month Day
Medication code * (see Section 3) — Office Use

Contact Two Information

Contact name *Last* — *First* — *Middle*
Gender ☐ Male ☐ Female — Birthdate (year/month/day) — Age — Marital status
Current address
City/Town — Province and Country — Postal code
Telephone number ( ) — Cell number ( )
Occupation and place of work
Distinguishing features — Ethnicity *(see section 1)*
Date and Location of exposure
Relationship to patient *(X all that apply)* ☐ Regular partner ☐ Casual known ☐ Casual unknown ☐ Ex-Partner ☐ Working in sex trade ☐ Sex for money ☐ Sex for cigarettes or alcohol ☐ Sex for drugs
Contact treated? ☐ Yes ☐ No — Date Year Month Day
Medication code * (see Section 3) — Office Use

- **If you require assistance or consultation call (780) 427-2830 or toll-free access in Alberta at 310-0000 then (780) 427-2830.**
- **Mail all copies, sealed in the envelope provided.**
- Indicate if you require any of the following: ☐ Billing number ☐ Notification forms ☐ Patient literature

AH0332 (2007/10)

16.5 Case Definitions

HIV

Source: Public Health Notifiable Disease Management Guidelines February 2005, Alberta Health and Wellness
(http://www.health.alberta.ca/professionals/NotifiableDiseases.html)

Confirmed Case

Laboratory confirmation of infection:

- positive result on a screening test for HIV antibody (e.g., repeatedly reactive enzyme immunoassay) followed by a positive test result on a confirmatory test for HIV antibody (e.g., Western blot or immunoflourescence antibody test)

Probable Case

Single positive result for HIV RNA by polymerase chain reaction (PCR) [1, 2]

OR

Indeterminate confirmatory test for HIV antibody [1].

[1] If this occurs during acute seroconversion, diagnosis of HIV infection should be confirmed by performing confirmatory HIV antibody test within the next 6 months.

[2] Children < 18 months of age born to mothers known to be HIV positive: HIV RNA PCR is recommended at birth and at intervals as recommended by a pediatric HIV expert depending on the individual case history. HIV antibody testing is unreliable in infants < 18 months because of passive transfer of maternal IgG. HIV antibody testing in the potentially infected infant should be performed at ≥ 18 months to confirm infection.

16.5 Case Definitions

AIDS

Source: Public Health Notifiable Disease Management Guidelines February 2005, Alberta Health and Wellness (http://www.health.alberta.ca/professionals/NotifiableDiseases.html)

Confirmed Case

Laboratory confirmation of HIV infection
AND
One or more of the specified indicator diseases [1] definitively diagnosed.

[1]
Indicator Diseases for Adults and Adolescents > 15 years of Age
Bacterial pneumonia (recurrent)*
Candidiasis (bronchi, trachea or lungs)
Candidiasis (esophageal) †
Cervical cancer (invasive)*
Coccidioidomycosis (disseminated or extrapulmonary)*
Cryptococcosis (extrapulmonary)
Cryptosporidiosis chronic intestinal (> 1 month duration)
Cytomegalovirus diseases (other than in liver, spleen or nodes)
Cytomegalovirus retinitis (with loss of vision)*, †
Encephalopathy, HIV related (dementia)*
Herpes simplex: chronic ulcer(s) (> 1 month duration) or bronchitis, pneumonitis or esophagitis
Histoplasmosis (disseminated or extrapulmonary)*
Isosporiasis, chronic intestinal (> 1 month duration)*
Kaposi's sarcoma†
Lymphoma, Burkitt's (or equivalent term)*
Lymphoma, immunoblastic (or equivalent term)*
Lymphoma (primary in brain)
Mycobacterium avium complex or M. kansasii (disseminated or extrapulmonary)*
Mycobacterium of other species or unidentified species*, †
M. tuberculosis (disseminated or extrapulmonary)*
M. tuberculosis (pulmonary)*
Pneumocystis carinii pneumonia†
Progressive multifocal leukoencephalopathy
Salmonella septicemia (recurrent)*
Toxoplasmosis of brain †
Wasting syndrome due to HIV*
For pediatric cases only (< 15 years old)
Bacterial infections (multiple or recurrent, excluding recurrent bacterial pneumonia)*
Lymphoid interstitial pneumonia and/or pulmonary lymphoid hyperplasia†
* must have laboratory evidence of HIV infection
† may be diagnosed presumptively if laboratory evidence of HIV infection is present

Refer to HIV/AIDS Case Report: Adult, Adolescent and Pediatric (non maternal-fetal) Cases (Health Canada) for additional information on diagnostic criteria.

Probable Case

Not applicable

16.5 Case Definitions

HCV

Source: Public Health Notifiable Disease Management Guidelines February 2005, Alberta Health and Wellness (http://www.health.alberta.ca/professionals/NotifiableDiseases.html)

Confirmed Case

Laboratory confirmation of infection:

- Antibody to hepatitis C virus (HCV) as confirmed by at least two enzyme immuno-assays and/or RIBA [1]

OR

- 2 positive tests for Hepatitis C RNA by polymerase chain reaction (PCR) in the following situations only:
  a) Patients with immunosuppression due to advanced HIV co-infection; or
  b) Transplant recipients who may be unable to mount an antibody response.

Probable Case

- Hepatitis C RNA positive by PCR [2,3]

[1] This is the preferred test.

[2] If this occurs during acute seroconversion, infection should be confirmed with HCV antibody testing within the next 6 months.

[3] Children < 1 year of age born to mothers known to be HCV positive: the preferred test is HCV antibody testing at ≥ 18 months to confirm the infection, as testing prior to this age may be unreliable due to passive transfer of maternal antibody. To make an earlier presumptive diagnosis, HCV RNA PCR may be performed at 2-3 months of age.

16.5 Case Definitions

HBV

Source: Public Health Notifiable Disease Management Guidelines December 2005, Alberta Health and Wellness
(http://www.health.alberta.ca/professionals/NotifiableDiseases.html)

Confirmed Case

Laboratory confirmation of infection:

- Hepatitis B surface antigen (HBsAg) positive and immunoglobulin M (IgM) antibody to hepatitis B core antigen (anti- HBc) positive [1]

OR

- Loss of HBsAg over 6 months in the context of a compatible clinical history or probable exposure in the absence of treatment

OR

- Acute clinical illness [2] and HBsAg positive (and anti-HAV negative and anti- HCV negative) when the test for IgM antibody to anti-HBc is not available.

Probable Case

Acute clinical illness [2] in a person who is epidemiologically linked to a confirmed case.

[1] Anti-HBc-IgM can be positive in a reactive episode of chronic HBV carriers.

[2] Acute clinical illness is characterized by a discrete onset of symptoms and jaundice or elevated serum aminotransferase levels.

Chronic Carrier (1) ***(Provisional)***

Laboratory confirmation of infection with or without symptoms:

- Persistence of HBsAg positivity for more than 6 months

OR

- HBsAg positivity in a person who is immunoglogulin G (IgG) antibody to hepatitis B core antigen (anti-HBc-IgG) positive and immunoglobulin M (IgM) antibody to hepatitis B core antigen (anti-HBc-IgM) negative.

16.5 Case Definitions

Chlamydia

Source: Alberta Health and Wellness (2003). *Alberta Case Definitions Manual.*

Confirmed Case

Genital Infections

Laboratory confirmation of infection:

- Detection of *Chlamydia trachomatis* by standardized, validated and approved laboratory techniques (culture, molecular diagnostic tests, antigen detection and fluorescent antibody tests) in genitourinary specimens

Extra-genital Infections

Laboratory confirmation of infection:

- Detection of C. trachomatis by standardized, validated and approved laboratory techniques (culture, molecular diagnostic tests, antigen detection and fluorescent antibody tests) from rectum, conjunctiva, and other extra-genital sites

Perinatally Acquired Infections

Laboratory confirmation of infection:

- Detection of C. trachomatis by standardized, validated and approved laboratory techniques (culture, molecular diagnostic tests, antigen detection and fluorescent antibody tests) in nasopharyngeal

OR

- Other respiratory tract specimens from an infant who developed pneumonia in the first 6 months of life

OR

- Detection of C. trachomatis by standardized, validated and approved laboratory techniques (culture, molecular diagnostic tests, antigen detection and fluorescent antibody tests) in conjunctival specimens from an infant who developed conjunctivitis in the first month of life

16.5 Case Definitions

Gonorrhea

Source: Alberta Health and Wellness (2003). *Alberta Case Definitions Manual.*

Confirmed Case

Genital Infections

Laboratory confirmation of infection:

- Detection of Neisseria gonorrhoeae by standardized, validated and approved laboratory techniques (gram stain or urethral smears [males only], culture, molecular diagnostic and antigen detection tests) in genitourinary specimens

Extra-genital Infections

Laboratory confirmation of infection:

- Detection of N. gonorrhoeae by standardized, validated and approved laboratory techniques (culture, molecular diagnostic and antigen detection tests) in specimens from pharynx, rectum, joint, conjunctiva, blood, and other extra-genital sites

Perinatally Acquired Infections

Laboratory confirmation of infection:

- Detection of N. gonorrhoeae by standardized, validated and approved laboratory techniques (culture, molecular diagnostic and antigen detection tests) in a neonate[1] leading to the diagnosis of gonococcal conjunctivitis (gonococcal ophthalmia neonatorum), scalp abscess, vaginitis, bacteremia, arthritis, meningitis or endocarditis.

[1] For the purpose of this document, a neonate is defined as a newborn up to and including 28 days old.

16.5 Case Definitions

Syphilis

Source: Alberta Health and Wellness (2003). *Alberta Case Definitions Manual.*

Confirmed Case
Congenital Syphilis
Laboratory confirmation of infection:

- • Identification of Treponema pallidum by dark-field microscopy, fluorescent antibody, or equivalent examination of material from nasal discharges, skin lesions, placenta, umbilical cord or autopsy material of a neonate

OR

- Reactive serology (non-treponemal and treponemal) from venous blood (not cord blood) in an infant/child with clinical, laboratory or radiographic evidence of congenital syphilis, whose mother is without documented evidence of adequate treatment

Primary Syphilis
Laboratory confirmation of infection:

- Identification of T. pallidum by dark-field microscopy, fluorescent antibody, or equivalent examination of material from a chancre or a regional lymph node

OR

- Presence of one or more typical lesions (chancres), and reactive treponemal serology, regardless of non-treponemal test reactivity, in individuals with no previous history of syphilis

OR

- Presence of one or more typical lesions (chancres) and at least a 4-fold (e.g. 1:8 to 1:32) increase in the titre over the last known non-treponemal test in individuals with a past history of syphilis treatment

Secondary Syphilis
Laboratory evidence of infection:

- Identification of T. pallidum by dark-field microscopy, fluorescent antibody or equivalent examination of mucocutaneous lesions, condylomata lata and reactive serology (non-treponemal and treponemal)

OR

- Presence of typical mucocutaneous lesions, alopecia, loss of eyelashes and lateral third of eyebrows, iritis, generalized lymphadenopathy, fever, malaise or splenomegaly, AND either a reactive serology (non-treponemal and treponemal) or at least a 4-fold (e.g. 1:8 to 1:32) increase in titre over the last known non-treponemal test.

NOTE: The possibility of a prozone reaction should be considered in individuals who are suspected of having secondary syphilis but whose non-treponemal test is non-reactive.

(continued on next page)

16.5 Case Definitions

Syphilis (continued)

Early Latent Syphilis
Laboratory confirmation of infection:

- An asymptomatic patient with reactive serology (non-treponemal and treponemal) who within the past 12 months had one of the following:
    - Non-reactive serology
    - Symptoms suggestive of primary or secondary syphilis
    - Exposure to a sexual partner with primary, secondary or early latent syphilis

Late Latent Syphilis
Laboratory confirmation of infection:

- An asymptomatic patient with persistently reactive treponemal serology (regardless of non-treponemal serology reactivity) who does not meet the criteria for early latent disease and who has not been previously treated for syphilis

Neurosyphilis
Laboratory confirmation of infection:

- Reactive treponemal serology (regardless of non-treponemal serology reactivity) and one of the following:
    - Reactive CSF-VDRL in non-bloody cerebrospinal fluid (CSF)
    - Clinical evidence of neurosyphilis and CSF pleocytosis (particularly lymphocytes) in the absence of other known causes
    - Clinical evidence of neurosyphilis and elevated CSF protein in the absence of other known causes

Tertiary Syphilis Other Than Neurosyphilis
Laboratory confirmation of infection:

- Reactive treponemal serology (regardless of non-treponemal test reactivity) together with characteristic abnormalities of the cardiovascular system, bone, skin or other structures, in the absence of other known causes of these abnormalities. (T. pallidum is rarely seen in these lesions, although when present, is diagnostic.)

AND

- No clinical or laboratory evidence of neurosyphilis.

16.5 Case Definitions

Mucopurulent Cervicitis (MPC)

Source: Alberta Health and Wellness (2003). *Alberta Case Definitions Manual.*

Confirmed Case

Clinical illness[1] AND negative tests from genitourinary specimens for chlamydia and gonorrhea.

[1] Inflammation of the cervix with a mucopurulent or purulent cervical discharge or cervical bleeding on insertion of a swab.

Non-Gonococcal Urethritis (NGU)

Source: Alberta Health and Wellness (2003). *Alberta Case Definitions Manual.*

Confirmed Case (male cases only)

- Inflammation of the urethra with or without a mucoid, mucopurulent or purulent urethral discharge

AND/OR

- Inflammation of the urethra with or without a mucoid, mucopurulent or purulent urethral discharge
- ≥4 polymorphonuclear leukocytes per oil immersion field (x1000) in 5 fields in a smear of urethral secretions

AND

- Absent gram negative intracellular diplococci on gram stain of urethral secretions

AND

- Negative tests from genitourinary specimens for gonorrhea and chlamydia

16.5 Case Definitions

Pelvic Inflammatory Disease (PID)

This case definition was developed specifically for this report.

A case of PID occurred when a diagnosis for an individual with ICD-9-CM code=614 or ICD-10-CA code=N70, N73, N74.2, N74.4 appeared in one or more of: hospital inpatient files, ambulatory care, or fee-for-service claims files (see Data Sources section in Introduction). For analyses using a combination of these three data sources, individuals were counted only once for each incidence of PID. A 60-day interval between diagnoses was required for cases to be considered separate incidences of PID.

NOTE: PID is not a notifiable disease in Alberta.

16.6 *Missing Data*

Missing or Unknown Data (percent of cases) by Infection, Alberta, 1998 to 2006

	PHN[1]	Sex	Age	Postal Code/RHA	Ethnicity	First Nations Status	Exposure Category	Diagnosis Date
HIV*	11.9%	0.0%	0.0%	14.5%	2.0%	11.9%	1.1%	0.0%
AIDS	74.8%	0.0%	0.0%	23.3%	0.8%	74.8%	1.6%	0.0%
HCV	9.7%	0.1%	0.5%	7.7%	81.8%	9.7%	N/A	0.0%
Acute HBV	16.9%	0.0%	0.0%	0.2%	87.0%	16.9%	N/A	0.0%
Chlamydia	7.2%	0.0%	0.0%	3.8%	21.2%	7.2%	N/A	0.0%
Gonorrhea	6.5%	0.0%	0.0%	4.9%	20.2%	6.5%	N/A	0.0%
Syphilis	8.9%	0.0%	0.0%	0.6%	6.8%	8.9%	N/A	0.0%
MPC	11.9%	0.0%	1.0%	3.5%	12.8%	11.9%	N/A	0.0%
NGU	21.7%	0.0%	0.9%	17.3%	9.7%	21.7%	N/A	0.0%
PID	0.0%	N/A	0.0%	10.5%	N/A	0.0%	N/A	0.0%

Notes: * HIV became reportable as of May 1998, so 1998 data may be incomplete.

1. Missing PHN *after* linkage.

16.7 *Populations*

Populations by Year and Sex, Alberta, 1998 to 2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006	98-06
Female	1,430,827	1,463,434	1,485,610	1,512,834	1,544,803	1,568,585	1,590,264	1,614,344	1,653,895	13,864,596
Male	1,423,794	1,460,015	1,482,145	1,510,057	1,541,843	1,565,752	1,588,772	1,607,847	1,644,133	13,824,358
Total[1]	2,854,621	2,923,449	2,967,755	3,022,891	3,086,646	3,134,337	3,179,036	3,222,191	3,298,028	27,688,954
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**98-06**
First Nations Female	64,610	66,682	68,580	70,313	71,881	73,354	74,775	75,934	77,121	643,250
First Nations Male	64,777	67,060	69,137	70,923	72,524	73,998	75,412	76,382	77,399	647,612
First Nations Total[1]	129,387	133,742	137,717	141,236	144,405	147,352	150,187	152,316	154,520	1,290,862

Source: BIE: AHCIP Stakeholder Registry and Quarterly Population (Feb /07)

Notes: 1. Includes cases with sex missing.

Populations by Age Group and Sex, Alberta, 1998 to 2006 Combined

	<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 39	40 - 59	60+
Female	172,457	695,053	928,640	993,281	999,938	992,158	995,254	2,160,862	3,830,417	2,095,526
Male	179,789	728,938	978,332	1,044,774	1,049,008	1,006,630	996,630	2,144,476	3,908,556	1,783,177
Total[1]	352,246	1,423,991	1,906,972	2,038,055	2,048,946	1,998,788	1,991,884	4,305,338	7,738,973	3,878,703

Source: BIE: AHCIP Stakeholder Registry and Quarterly Population (Feb /07)

Notes: 1. Includes cases with sex missing.

Populations by Sex, Year, and Residence RHA, Alberta

	Chinook	Palliser	Calgary	David Thompson	East Central	Capital	Aspen	Peace Country	Northern Lights	Alberta[1]
Female										
2004	77,843	49,399	575,671	145,192	55,348	500,498	86,712	65,088	34,383	1,590,264
2005	78,309	50,067	587,909	147,098	55,525	507,226	86,767	66,072	35,274	1,614,344
2006	79,250	50,911	607,277	150,278	55,880	518,833	87,432	67,866	36,027	1,653,895
2004 to 2006	235,402	150,377	1,770,857	442,568	166,753	1,526,557	260,911	199,026	105,684	4,858,503
1998 to 2006	690,357	433,637	4,962,801	1,271,941	493,101	4,374,146	774,748	572,738	289,992	13,864,596
Male										
2004	76,243	50,301	573,820	144,969	54,873	493,423	89,472	68,082	37,467	1,588,772
2005	76,595	50,835	583,291	146,799	54,951	498,122	89,585	69,165	38,399	1,607,847
2006	77,312	51,476	600,537	149,968	55,317	508,720	89,988	71,143	39,520	1,644,133
2004 to 2006	230,150	152,612	1,757,648	441,736	165,141	1,500,265	269,045	208,390	115,386	4,840,752
1998 to 2006	676,745	438,078	4,937,881	1,270,347	487,711	4,301,330	799,143	598,632	313,269	13,824,358
Total[2]										
2004	154,086	99,700	1,149,491	290,161	110,221	993,921	176,184	133,170	71,850	3,179,036
2005	154,904	100,902	1,171,200	293,897	110,476	1,005,348	176,352	135,237	73,673	3,222,191
2006	156,562	102,387	1,207,814	300,246	111,197	1,027,553	177,420	139,009	75,547	3,298,028
2004 to 2006	465,552	302,989	3,528,505	884,304	331,894	3,026,822	529,956	407,416	221,070	9,699,255
1998 to 2006	1,367,102	871,715	9,900,682	2,542,288	980,812	8,675,476	1,573,891	1,171,370	603,261	27,688,954
First Nations 98-06	112,047	10,650	257,419	146,375	17,438	333,840	197,904	112,082	102,983	1,290,862
First Nations %	8.2	1.2	2.6	5.8	1.8	3.8	12.6	9.6	17.1	4.7

Source: BIE: AHCIP Stakeholder Registry and Quarterly Population (Feb /07)

Notes: 1. Alberta total contains unknown RHA cases.

2. Includes cases with sex missing.

16.7 Populations

Populations by Sex, Year, and Region, Alberta

	Southern Alberta	Calgary Area	Edmonton Area	Northern Alberta	Alberta[1]
Female					
2004	327,782	575,671	500,498	186,183	1,590,264
2005	330,998	587,909	507,226	188,113	1,614,344
2006	336,319	607,277	518,833	191,325	1,653,895
2004 to 2006	995,099	1,770,857	1,526,557	565,621	4,858,503
1998 to 2006	2,889,036	4,962,801	4,374,146	1,637,478	13,864,596
Male					
2004	326,386	573,820	493,423	195,021	1,588,772
2005	329,177	583,291	498,122	197,149	1,607,847
2006	334,073	600,537	508,720	200,651	1,644,133
2004 to 2006	989,636	1,757,648	1,500,265	592,821	4,840,752
1998 to 2006	2,872,881	4,937,881	4,301,330	1,711,044	13,824,358
Total[2]					
2004	326,386	573,820	493,423	195,021	1,588,772
2005	329,177	583,291	498,122	197,149	1,607,847
2006	334,073	600,537	508,720	200,651	1,644,133
2004 to 2006	989,636	1,757,648	1,500,265	592,821	4,840,752
1998 to 2006	5,761,917	9,900,682	8,675,476	3,348,522	27,688,954
First Nations 98-06	286,510	257,419	333,840	412,969	1,290,862
First Nations %	5.0	2.6	3.8	12.3	4.7

Source: BIE: AHCIP Stakeholder Registry and Quarterly Population (Feb /07)

Notes: 1. Alberta total contains unknown RHA cases.

2. Includes cases with sex missing.

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